

The United States MILLER

Volume 7.—No. 3.

MILWAUKEE, JULY, 1879.

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NEWS.

EVERYBODY READS THIS.

ITEMS GATHERED FROM CORRESPONDENTS, TELEGRAMS AND EXCHANGES.

John D. Lang, miller, of Vassalboro, Me., is dead.

Fisch's mills in Manitowoc Co., Wis., are being rebuilt.

Jno. S. Urie, of Carbondale, Kan., is building a two run mill.

A flouring mill was burned in Boston, Mass., June 24th.

The great Menasha water-power suit is now on trial at Oshkosh.

Ten thousand barrels of California flour were recently shipped to China.

Nearly 12,000 barrels of flour were shipped from Minneapolis June 21st.

Messner Bros., millers, Bridgeport, Mich., have dissolved partnership.

D. K. Landis, miller, of Derry Church, Pa., has made an assignment.

Wm. Hamilton & Co., of Edwardsville, Ala., are building a small custom mill.

Work on Washburn mill "A," in Minneapolis, is being rapidly pushed forward.

The mill of Samuel Stewart, situated at Huntsville, Ohio, is being remodeled.

Messrs. Haffner & Schimer, millers, Lockport, N. Y., have made an assignment.

H. F. Brown & Co., millers, Minneapolis, succeed to the firm of S. S. Brown & Co.

John Carlisle, of Millersville, Ind., is placing new process machinery in his mill.

R. K. Stafford, miller, of the firm of R. K. Stafford & Son, Staffordsville, Va., is dead.

Boek & Hess, of Argos, Ind., are adding an additional run of buhrs, iron hurst and elevators.

The milling firm of Rye & Vincent, Edenburg, Va., has been succeeded by Vincent & Boehm.

Bauman & Snyder, millers, of Pataha City, W. T., have dissolved partnership. Bauman continues.

The Milwaukee Middlings Millstone Co. have sold over one hundred mills during the past month.

John T. Noye & Son's, Buffalo, N. Y., loss by fire was about \$50,000. They were insured for \$40,000.

The Milwaukee Middlings Millstone Co. are more crowded than ever with orders and business still increasing.

The large mill of Long & Co., at Russellville, Ky., is being overhauled and is having additional machinery.

Samuel Zimmerly, of Socorro, New Mexico, is adding a run of buhrs, elevators, bolt and other machinery to his mill.

J. M. Weldon, of Lewisburgh, Ky., is building an addition to his saw mill, in which he will place a custom mill outfit.

The Anchor Mill, Minneapolis, owned by Messrs. Pillsbury & Co., has been thoroughly reconstructed and has started up.

The mill at Money Creek, Minn., formerly owned by S. Fox, has been purchased by John Leman, who has given it a general overhauling.

Albert Curtis, an employe of the Northwestern Mills, Milwaukee, had his leg broken, June 20th, by the careless backing of a wagon.

The mill at Bluffton, Iowa, formerly owned

by Blackmer & Meder, has been sold to Hall & Rice. They intend to remodel the mill this summer.

The firm of D. K. & J. Sternberg, millers, of Boulder, Col., has been dissolved. The business will hereafter be conducted by J. Sternberg.

W. W. Vaughn, miller, of Lyons, Wis., is dead. He was also senior member of the firm of W. W. Vaughn & Co., flour dealers, in Racine, Wis.

Strowig Bros. have ordered a two-run water mill of the Nordyke & Marmon Co., of Indianapolis, Ind., which is to be set up at Valley Falls, Kan.

Jonathan Greggson, of Austin, Minn., is taking the machinery out of his mill and will rebuild it and increase the capacity, making it a first-class mill.

Robt. Williams, proprietor of the Northwestern Flour Mills, Milwaukee, has recovered \$302 of the \$332 recently stolen from him by his servant girl.

The grist mill owned by James Forbes at Chickasaw, Iowa, is having an addition built on, and increased two run of stone, making it a five-run mill.

The Attica Milling Co., of Attica, Ind., have ordered two additional run of buhrs, bolting chests and elevators, to increase their mill to a five-run.

Nordyke & Marmon Co., of Indianapolis, are building a large elevator for I. P. Evans & Co., of Indianapolis, for handling grain used in their mill.

Nordyke & Marmon Co., of Indianapolis, Ind., are building a two-run mill, to be driven by an Atlas engine, for A. W. Althouse, of Osage Mission, Kan.

Wysor, Kline & Co., of Muncie, Ind., are making extensive improvements in their large mill, and adapting it to the latest principles in new process milling.

Four thousand barrels of flour were recently shipped from New Orleans to Baranguilla, a town in New Grenada, on the Magdalena river, South America.

The Selma (Ala.) Compress Co. have ordered a three-run mill, which will be intended for manufacturing corn-flour, meal and various other products from corn.

Most of the mills on the Southern Minnesota Railroad in Minnesota are running full capacity, and at the present time farmers are not slow in bringing in their wheat.

The Milwaukee Middlings Millstone Co. have a number of contracts on hand to take out four-foot stones and replace with their sixteen-inch mills for grinding wheat.

Mr. F. W. Stock, of Hillsdale, Mich., takes four more sixteen-inch mills from the Milwaukee Middlings Millstone Co., throwing out four-foot stones to make room for them.

The Milwaukee Middlings Millstone Co. are furnishing 7 mills in Michigan, 4 in Wisconsin, 3 in Minnesota, 2 in Missouri, 5 in Illinois, and many others in various parts of the country.

The firm of Frasier & Bennett, millers, Clyde, Kansas, has been dissolved by mutual consent, Mr. Bennett withdrawing. The new firm succeeding to the business is now styled Frasier & Withaup.

C. C. Busby, of Fieldon, Illa., has engaged the Nordyke Marmon Co. to remodel his mill to the improved methods of new process milling. Two run of buhrs, iron hurst, purifiers, rolls, etc., are being furnished and set in position.

The mill at LaCrosse, Wis., owned by A. A. Freeman and M. L. Freeman, now has fifteen run of stone and twenty-two sets of rollers. Millwrights are now at work endeavoring to

make it as near fire-proof as possible. It is a first-class risk in every particular, and is a success under the management of Mr. Ziedler.

Millers who have the old style porcelain rollers run by gear wheels, that wish to stop that everlasting deafening noise, can do so by running the gear wheels in oil. Have a tin or galvanized iron pan made that will entirely encircle said gear wheels fitting tight around the shafts; hinges on one side, and fastenings on the other; fill about half full of oil.

Within the past year John T. Noye & Sons, have ordered Walker's Belt Tighteners for operating belts driving mill-stones and machinery in several of the mills for which they have furnished the fittings; among which may be mentioned the well known milling firm of Penfield, Lyon & Co., Oswego, N. Y., for whom they recently ordered several of these tighteners. This shows an appreciation of this invention in high quarters.

It is a settled fact that Cawker City is to have a first-class steam flouring mill. The necessary aid which has been asked of our people has been extended, and the building will be immediately erected. The mill will be furnished by four run of burrs, and the engine will be of sixty horse power. The entire mill, when completed, will cost from \$10,000 to \$11,000, and will be an institution that will go far toward building up the business interests of our city. We wish the projectors of this enterprise the very best of prosperity.—Cawker City (Kansas) Free Press. [Messrs. E. M. and J. A. Beach, formerly of Illinois, are the parties who are going to build the mill above mentioned.]

The following is a list of millers who have lately bought the Becker brush from the Eureka Manufacturing Company, of Rock Falls, Illinois: Wm. Ohlhausen, Weston, Mo.; W. H. Burns, Woodville, Ohio; Barney & Kibby, Sandusky, Ohio; Coulton Bros., Bellefontaine, O.; W. E. Woodyear & Co., Baltimore, Md.; Q. M. Brandt, Mount Joy, Pa.; Richmond City Mill Works, Richmond, Ind.; Nordyke & Marmon Co., Indianapolis, Ind.; J. E. Longhrey & Co., Monticello, Ind.; D. H. Caswell & Co., Nashville, Tenn.; Cannon & Son, Bell's Depot, Tenn.; Whitmore & Binyon, London, England; Oscar Oexle, Augsburg, Germany; Anton Gunther, Hamburg, Germany; J. Grossman, Buda Pesth, Hungary; Ernst Billhuber, Holec, Spain; A. Millot, Zurich, Switzerland.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

In our August number we shall present our annual review of the milling industry in Milwaukee.

It is highly probable that the electric light will soon be introduced into the leading flour mills of this country.

We call the attention of our readers to the advertisement of Wilhelm Braun, of Carlsbad, Bohemia. Parties writing to foreign advertisers should mention in their letter where they saw their advertisement. Letter postage to European parts is 5 cents for each half ounce. Newspapers, 2 cents each.

THE Board of Trade flour trier and grain inspector, manufactured by H. J. Deal, of Bucyrus, O., is meeting with rapid sale. The celluloid flour triers are cheap and very handsome. Mr. Deal presented us with one a short time since, and one of our miller friends captured it from us, but before he had enjoyed the possession of it 24 hours, a brother miller, just on his way to England, gobbled it from him. We hope some of the British millers will keep up the joke and pass the trier along.

IT BEATS THEM ALL.

Lehmann's Method of Truing the Faces of Mill Stones.

Ever since the announcement was made of the novel and important invention by Wm. Lehmann, of Milwaukee, of a simple method of securing a perfectly true face on mill-stones, great interest has been manifested by millers all over the country. His method is so perfect that, after he has trued up the faces of the upper and lower stones, he can place a row of single thicknesses of paper all around on the lower stone, and then let down on it the upper one, and every piece of paper will be held tightly between the stones. This he has done frequently. Every miller knows the value of a true face. No patent staff of any kind is required. Mr. Lehmann's method has met with the warmest approval wherever introduced, as can readily be seen by reference to the letters which we append below. The first of which is from George G. Smith, the well-known millwright, of the firm of Smith Bros., No. 454 Canal street, Milwaukee, a gentleman to whom the Millers' National Association are under no small obligations for efforts made in their behalf.

MILWAUKEE, June 21, 1879.—Wm. Lehmann, Esq.—Dear Sir: I herewith give you my opinion concerning your improvement in staffing and truing mill-stones. I have seen the improvement used, and paid attention to the improvement it made in the grinding, and found it to exceed anything I have seen. I find that it is the best method so far invented, and find it entirely new and novel, and would cheerfully recommend it to all that have faith in a true face on a stone. Yours truly, GEO. G. SMITH.

GENEVA, Ill., May 23, 1879.—Wm. Lehmann, Milwaukee, Wis.—Dear Sir: Enclosed find Chicago draft for — dollars, as per agreement with our Mr. Bennett, for your patent for use in our mill—"Bennett's Mills," Geneva, Kane county, Illinois, 8 run of 4-foot stones. We consider it the best thing that ever was for straightening the face of a mill-stone, and worth the money. Yours truly, BENNETT, BROS. & COE.

PLYMOUTH, Wis., May 9, 1879.—Mr. Wm. Lehmann: Heretofore we have used the old-fashioned long staff as well as the circular staff, but since testing the merits of your method of staffing mill-stones we are convinced that it is by far the best way yet discovered. Being millers of many years' experience we supposed we knew how to staff a stone, but we confess, we were wrong entirely. Your method of staffing is beyond any question the most perfect used so far, and in our opinion no miller can afford to do without it. Respectfully, HOTCHKISS & PURLMANN.

BEAVER DAM, Wis., March 10, 1879.—Mr. Wm. Lehmann: It was as much a surprise as a pleasure that we witnessed your system of staffing a stone, and have become satisfied that it is the correct principle, and do hereby certify that we shall use Mr. Wm. Lehmann's device for staffing mill-stones in our mill, and do say that it is the best device we have seen. E. R. HOYT & SON. G. S. Campbell, head miller.

FOX LAKE, Dodge Co., Wis., March 26, 1879.—Mr. Wm. Lehmann—Dear Sir: We enclose a draft of — dollars, the balance due you for your method of staffing stones. We can recommend it as being a great improvement over anything we have seen. Yours truly, COMAN & MORRISON. J. W. Ashley, head miller.

WATERTOWN, Wis., Feb. 26, 1879.—This is to certify that we are using W. Lehmann's method of truing and facing mill-stones in both of our mills, and find it superior to anything we have yet used or seen, and found on bringing the two faces of the stone together we could lay paper between each two separate lands and letting the stone down none of same could be withdrawn. F. MILLER & CO. W. H. Foote, head miller.

Letter from a millwright since 1840 and mill owner for the last 15 years.—This is to certify that I have used Mr. Wm. Lehmann's method for straightening or truing the face of mill-stones for the past four months, and am satisfied that it is far the best of any in use. For with the use of this method we are enabled to make more middlings and more uniform and of necessity a better quality of patent flour. And would recommend its use. Most respectfully yours, ORVILLE HATHAWAY. Dated Oconomowoc, Waushara Co., Wis., Feb. 18, 1879.

OSKESHAUGO, June 9, 1879.—Wm. Lehmann—Dear Sir: Your favor and bill came duly to hand, your draft came and was paid. I am well pleased with the work. I have fixed 3-run; they do nice work. I hope you will make some money, as you have a valuable improvement to mill owners. Yours truly, HENRY ROBER.

Read Mr. Lehmann's advertisement on another page, and send in your order. His terms are reasonable, and his method is well worth the money asked for it. Address all communications to Wm. Lehmann, 722 Fourth street, Milwaukee, Wis. U. S. A.

A PARTY of natives from the "ould soil" visited a Westfield, Mass., clothing store the other day to buy a suit of grave clothes for a deceased friend. All varieties of garments were examined and discussed by the mourning friends, but none could be decided upon until one of the party held up a light, thin suit, saying, "gorra, let's take this, by's, it's thin and cool, and poor Pat will find it mighty comfortable." The suit was bought with grave faces, none of the party evidently seeing any incongruity in the recommendation.

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MILWAUKEE, JULY, 1879.

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We send out monthly a large number of sample copies of THE UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. We are working our best for the milling interest of this country, and we think it no more than fair that our milling friends should help the cause along by liberal subscriptions. Send us One Dollar in money or stamps, and we will send THE MILLER to you for one year.

POSTAGE stamps taken in payment of subscription to THE UNITED STATES MILLER and the Millers' Text Book. \$1.25 pays for both for one year.

We call the attention of our readers to the advertisement of the Schroll Grain Drier. We published a description of this machine in our May number. It is unquestionably the machine of the day for grain drying purposes. Write for further information to C. Schroll, 24 and 26 S. Canal st., Chicago, Ill.

THE COMPROMISE has been endorsed by most of the State Associations. Some of the Minnesota millers still feel bad about it, but we think that on further reflection all will become satisfied that the terms secured by the Sub-executive Committee were favorable. At any rate, millers are not compelled to avail themselves of those terms if they think they can do any better.

Flour Mills Burned Recently.

Knowles, Bigelow & Co., Randolph, Wis. Loss, \$5,000.

H. P. Beattie, Davenport, Iowa.

Borst Bros, Middleburg, Y. Y.

Bennett, Becker & Co., Jackson, Mich. Loss, \$125,000; insurance, \$75,000.

Burroughs & Pierson, Flint, Mich.

M. Gelselman, Marlboro, Va. Insured, \$4,000.

THE Northwestern Grocer is a new weekly trade paper, published in Milwaukee, by Messrs. Trayser Bros. It is the newest and most able commercial journal that has ever been published in this city. It circulates among dealers in the States of Wisconsin, Minnesota, Michigan, Iowa and Northern Illinois, and has already been of great value to

Milwaukee merchants. We wish the Northwestern Grocer a long and successful career.

Mr. SHANK, of the well-known firm of Vochting, Shape & Co., bottlers of Schlitz's lager beer, has been on a trip for a few weeks, half business and half pleasure, to the Pacific coast. In his letters home to his friends he speaks in highly favorable terms of the climate, fruitfulness, geniality and hospitality of our Pacific brethren. He is also gratified to learn that Californians are not so prejudiced in favor of their native wines and Kentucky Bourbons, as to waste any opportunity of drinking a glass of Milwaukee lager.

THE Milwaukee Practical Miller's Association, in addition to the ordinary benefits of the Association, has taken the preliminary steps for providing a relief fund for indigent and sick members, and for those injured by accident; thus doing away with the unpleasant, uncertain means of relief which comes from passing 'round the hat, and putting in the place of charity, a good business fund for the relief of deserving members. It solicits correspondence from like associations wherever such may exist.

Indiana Millers' State Association.

The annual session of the Indiana Millers' Association was held at Indianapolis on June 19th. The attendance was fair in numbers, and the result of much importance to the association. The session lasted two days.

President Ellis opened the proceedings with the following address:

Gentlemen—It is now two years since the organization of our State Millers' Association. During this time there has much transpired which was and is of great importance to the milling interest, the most important of which was the victory over the Consolidated American Middlings Purifier Company, at St. Louis. This decision in our favor was and is of more importance to the milling interest of this country than many suppose, for in this we have actually shown our strength, and shown it in such perfection that any ring that may be formed hereafter will not attack us before knowing that their claim is just and right, and should their claim be a just one, then we are prepared to compromise with them for a fair compensation for whatever patent they may possess.

The compromises just made by our National Executive Committee, of the nature of which you have all been informed before this, have no doubt been made with a view to protect the mutual interest of all millers belonging to the association, and should be complied with by all means, as they have not done this hastily, nor without due deliberation, and have acted also upon the advice of the attorney of the National Association, the Hon. George Harding, who has attended for the past two or three years to the case just decided in our favor. The consideration of this compromise is not of so great an amount but that every miller interested can pay, and this will at least put aside all litigation against paid-up members that may arise hereafter.

This, now being effected, it is not said that our troubles in this direction have ceased, for there may yet be other matters brought to light which are now looked at triflingly that may be a source of great annoyance to us; therefore, I would beg of you not to lose interest in our association or its workings, for you have now plainly seen its benefit.

In this matter alone you have been more than doubly compensated for all the outlays you have had, consequently there is nothing to regret.

Heretofore I must say that members have not taken such an active part in discussing the various topics that have been brought before our conventions. This I regard as a lack of duty, as it is to every one's interest to fully understand every point that is discussed, and it is often the case that the humblest one among us can and will make such suggestions as will overcome existing evils, if so I may call it, and enlighten us all on a subject that has long been dark to us.

The various committees that I have appointed to report at this meeting, the Chairmen of which I have addressed personally, will, I hope, make such reports to you at this meeting as will be of much interest to you.

Another important matter to come before this meeting is the revision of our old constitution, or, in other words, to adopt a new constitution. This I have submitted to our Executive Committee, and they will report it to you.

It will also be your duty at this meeting to elect a new set of officers for the coming year, and in doing this, let us take such men from among us, and we have plenty of them, that have the interest of our Association at heart and will give it their best attention.

After due discussion on report of Mr. Gibson, of the Executive Committee, the recommendations of his report were adopted, whereby the constitution was amended, to be in accordance with that of other Western Milling Associations, that of the Wisconsin Millers' Association being adopted.

Able reports from Committees on "Inspection" and "Grain for Milling" were read, and adopted, after discussion.

An interesting discussion occurred on the

second day of the session, on flour tests. Assessments were made, and the following officers elected for the ensuing year:

President—Jos. F. Gent, Columbus.
First Vice President—B. Jenkins, La Fayette.
Second Vice President—J. R. Callender, Vincennes.

Secretary and Treasurer—H. H. Emery, Indianapolis.

Executive Committee—David Gibson, Indianapolis; John A. Thompson, Edinburg; N. Elles, Evansville; Wm. Paddock, Vincennes.

Member of Executive Committee of National Association, R. L. Thompson, Terre Haute.

It was also moved and carried that any mill owners in the State may become members of the Association upon full compliance with the provisions of the Constitution and the payment of the full amount already paid by other members to date, and the annual membership fee of five dollars. The Secretary was instructed to notify millers of this action.

No further business being before the meeting it was adjourned.

(For the UNITED STATES MILLER.)

To Millers of the State of New York.

At the annual meeting of the Millers' National Association, held in Chicago, on the 18th, 14th and 15th of May last, the Executive Committee accepted the proposition made by the Consolidated Middlings Purifier Company, of Jackson, Michigan, whereby full-paid members of the various Associations, and all who may become members prior to July 15th, 1879, and who are infringing some or all of the Geo. T. Smith patents, more particularly the "combination in middlings purifier" of the suction (or blast) "vibrating sieve and brush under the sieve" in any purifier they are now using, can settle and be granted an entire release for the past, and a license for the future, for the sum of twenty-five dollars for each purifier containing such combination. This sum will cover all patents on purifiers belonging to said company (excepting the Cochrane, which the committee refused to entertain), including the Stoll, Barter and Smith claims. Members desiring to put brush on purifiers now in their mills, can do so at same rates.

An equally favorable proposition, made by the Downton Purifier Manufacturing Company, for their Downton process patent, No. 162,157, which covers the application of rolls to unpurified middlings for the purpose of removing the germ, but does not cover their use on wheat, bran, or purified middlings, was accepted by the committee. Members infringing can settle for past and future for a royalty of \$25.00 per set for the first three sets; \$15.00 per set on the second three sets; \$10.00 per set on the next four sets, and all over that number \$5.00 per set. This applies only to rolls at present used in their mills, and the said royalty is to be paid when the validity of the patent is sustained by a decision of a Circuit Court of the United States.

These terms will apply only to full-paid members of the various associations. For details I will refer you to the inclosed circular. The National Executive Committee, after a thorough examination of the various claims, aided by our counsel, Mr. Harding, believe this arrangement to be exceedingly favorable to the millers. The policy of the National Association is to avoid all litigation so far as can honorably be done, and especially where there are no good reasons for doubting the validity of the patents, and to compel patentees and manufacturers of mill machinery to protect and defend their licenses.

As evidence of the very favorable terms of the above proposition to millers, I have reliable information that the owners of the above patents charge a certain purifier manufacturer (and refuse to take less), \$75.00 royalty on each machine he hereafter manufactures using a brush on the underside of a vibrating sieve. Millers of this State infringing those and other patents, who fail to become members of the New York State Millers' Association before July 15, 1879, will be entirely at the mercy of the Consolidated Middlings Purifier Co., or some similar organization. In addition to the advantages above mentioned, members will be protected against all future fraudulent or invalid patents which may be owned by unscrupulous men or combinations, whose sole aim is to bleed or levy blackmail on the miller. They will also have the benefit of all the information now or hereafter in the possession of the National Association, and the large discounts which will be obtained by the officers of the National Association for their members from patentees and manufacturers of mill machinery. The number of patents issued within the last seven or eight years on middlings purifiers amount to several hundred. Some of the older ones, notably the Barker

and Stoll, have lately been reissued for the purpose of covering later and more improved machines. The propositions made by the owners of the Barker patent re-issued in November last, which claims to cover all suction machines, was declined by the committee, and is liable to be the subject of litigation in the near future. Millers desiring to become members can do so by remitting to the Secretary and Treasurer of the New York State Millers' Association \$25 per run of burrs, reckoned on the following basis: counting all stones in mill 36 inches diameter and over, used on wheat, middlings or bran, custom grinding stones included; all under that diameter, two stones counted as one, and in all cases where iron or porcelain rolls are used, three sets as one stone. Members and those desiring membership will please fill out the marginal interrogatories of the enclosed circular, mailing one to me and the other to S. H. Seamans, Secretary National Association, Milwaukee, Wis., and new members infringing can avail themselves of the above arrangement, by returning the enclosed certificate for the signature of the Secretary and Treasurer of the New York Millers' Association, with a check for the proper amount. The business can be done through me, should you prefer.

To show the utter helpless condition of a single miller when used by a patentee, I will say, that the cost to the National Association of defending the Cochrane suit, was \$74,495.50.

J. A. HINDS,
Secy. and Treas. N. Y. S. Millers' Association.
Rochester, N. Y., June 11, 1879.

Trade Items.

Edw. P. Allis & Co. have just received a large shipment of the choicest violet burr blocks. They have large orders from Minneapolis for these stones which are in great demand there.

Edw. P. Allis & Co. have over 400 machinists and moulders now on their pay roll, besides their large crew of millwrights.

J. A. Cole, of Rochester, Minn., has contracted with Edw. P. Allis & Co., of Milwaukee, for his new mill. It will contain violet stone and porcelain rolls, used in combination.

Edw. P. Allis & Co. are fitting out a new machine shop in addition to the present large one, to keep up with their orders for rolls and engines.

Gould & Ostrander, of St. Louis, Mo., have ordered a Reynolds-Corliss engine of Edw. P. Allis & Co.

Seymour, Sabin & Co., of Stillwater, Minn., have ordered a 26x48 Reynolds-Corliss engine of Edw. P. Allis & Co., Milwaukee.

The Reynolds-Corliss engine has, in carefully conducted export trials, developed an economy never before equaled.

The Millers' Association, of Minnesota, have called a special meeting at the Nicollet House, in Minneapolis, July 1st, to make a move to protect themselves against the Cochrane and Downton rings. The heavy mill-owners of the Northwest are not satisfied with the action of the National Association in these settlements, and will do what they can to avoid paying on this basis.

E. P. Archibalds & Co., of Dundas, Minn., are about to remodel their mill, will raise the roof of mill building 35 feet, put in more rolls and increase the capacity throughout, besides adding steam power; contract is not let yet. This mill manufactured the first Minnesota patent flour, it taking about three weeks to manufacture the first 100 barrels. At the present time Archibald & Co's. patent flour is well known throughout the universe for its superior quality.

Jesse Ames Son's at Northfield, Minn., are increasing the capacity of their mill, building an addition to the building. They contemplate putting in steam power on account of scarcity of water. W. G. Gunn, of Minneapolis, is doing the millwright work.

Special Business Notices.

Do you need a good Saw Gummer or Saw Tooth Swage? If so write to J. W. Mixer & Co., Templeton Mass. Agents wanted.

NOTICE.—Owing to the death of Mr. Edward Harrison, we take this method of informing you that the business will be continued until further notice, and that all orders will receive prompt attention. Letters should be directed to the "Estate of Edward Harrison," New Haven, Ct.

IMPORTANT NOTICE TO MILLERS.—The Richmond Mill Works and Richmond Mill Furnishing Works are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; therefore, to save delay or miscarriage, all letters intended for this concern should be addressed with care to Nordyke & Marmou Co., Indianapolis, Ind.

SPECIAL NOTICE.—We desire to make known to the millers of the United States that we have secured license under the Barker and Sherburne patents, and by purchase, have secured exclusive right to the Palmer & Hammond patent, and are thus in position to fully guarantee our customers against prosecution in the use of the Garden City Purifier.

COLLINS & GATHMANN, Chicago, Ill.

On the Reduction of Wheat and Middlings.

BY JONATHAN MILLS.

The reduction of wheat into a first-class flour without undue waste of the flour portion of the berry, and at the same time bringing the cost of production down to the least possible trouble and expense, is a problem that to-day interests every first-class mill owner in this country. In competing in the markets of Europe, we have to contend with some very fine hard wheats as well as with their old established brands of flour. Some of our mill owners have been inclined to attribute the superior quality of a few brands of Hungarian flour to their system of reduction by rollers. I am free to express my belief that if we had the same wheat to handle in this country in some of our finely-built mills where stone-dressing has been brought up to a science, we would do far better work and make a grade of flour that could not be equaled by any system of rollers ever devised. Every miller and millwright that I have talked with that has visited the mills of Europe, informs me that they are far behind us as to the condition in which they keep their burrs dressed and balanced. If such is the fact it is easily explained why they give preference to reduction by rolls. I am positively sure that the reduction of middlings down to flour by rolls, no matter how gradual the process may be, is all wrong. I admit that the roller flour shows up well in hand as far as color is taken into account, and that it also shows up very well when first baked into bread; but right here is where it falls far behind flour made by mill-stones—it dries out very quickly, and in about eighteen hours it has no more moisture in it than a red cedar chip, and is about as devoid of taste as so much starch. This is caused by the rollers flattening out the gluten cells, as well as a great portion of the gluten itself which cannot bolt through the cloth, and, in the very nature of its form, is compelled to part partnership with the starchy portions of the flour. While the flour passes through the cloth the gluten cells and a great portion of the gluten adhering to the cells are passed out, either through the coarser cloth so often used, toward the tail of the reels, to grade the fine, unpulverized portion of the middlings through, or else, where fine cloth is used the entire length of the reel, they pass out over the tail of the reel. Therefore, the very material that retains moisture in the bread is bolted out, while flour made by mill-stones, perfectly fitted up, rounds up every particle of middlings, gluten cells and all, into a fine, granular flour that will all pass through the cloth together. We hear fault found with middlings sometimes being out of round, elongated, angular, and unfit to be perfectly purified. I have yet to hear the first miller attribute the same fault to flour, although the same fault exists in the oval, elongated form of the flour when made by rollers. The consequence is, it must be rolled down to the very finest possible degree in order to have it pass through even moderately fine cloth. Some man should invent a cloth with oval meshes to accommodate the roller advocates.

About two years ago I stated my belief that no system could be devised in the shape of rollers or crushers that could be made to supersede the mill-stone for flour making. I am now stronger in that belief than ever before. We have never had a perfectly constructed mill-stone, with its whole outfit so made as to hold it rigidly to its duty, therefore, we have never done as perfect work with mill-stones as they are capable of doing. But even as they are operated in every well-constructed mill where stone-dressing is done in good shape, they will make better flour than any kind of rolls.

I do not want it understood that I would exclude rolls entirely from the mill, as I believe they are a much-needed auxiliary to the more perfect reduction of the wheat by mill-stones, in sizing down the coarse, germ middlings, and for flattening out the germ so as to separate it from the middlings. Further than their use as above stated, I think they are not required. They are a delusion and a snare for any other use in milling.

Thus far I have only been making comparisons between the use of rolls and mill-stones for the reduction of middlings. As to the reduction of the wheat berry from its natural form, I wish to treat first on its preparation for proper reduction. I have read the reports of the late Millers' Convention on milling, improved methods and machinery, by the various committees, all of which interested me very much, showing that at least they were trying to arrive at a satisfactory solution

of the proper methods of milling. On the subject of cleaning wheat, Mr. Gibson and Mr. Gent both touched on the ending stone for cleaning wheat. Evidently both had been exchanging ideas, both being from the same section of Indiana. Mr. Gent says he is of the opinion that the day is not far distant when the ending stone will supersede all other cleaning machinery for scouring the wheat berry. This process, in his opinion, will be carried down to the exclusion of the germ. With all due respect for their opinions, I will have to differ widely from them on that mode of cleaning wheat. They evidently have not investigated this matter as closely as they might, or they would have very soon arrived at the fact that to end wheat down to the exclusion of the germ would reduce the weight of the wheat, at the very least, fifteen per cent. No miller could stand that kind of a reduction. In ending wheat on ending stone (which means a hard sandstone and nothing else) the bran is abraded more or less at each end and at each lobe of the kernel. The idea of Mr. Gent, to pass it through a brush machine, does not remedy the evil already done by the ending stone. The wheat flour cannot be kept up in color when made from ended wheat, as the bran is so badly abraded that the burrs in grinding it comminute a great portion of it so much that it bolts through with the first flour, and by no system of bolting can it be got out. The very gentlest manner in which we can clean wheat is almost too harsh for some of the tender winter wheats. A far better plan is to pass the wheat through about 24 conveyors, each 50 feet long, making 1,200 feet altogether, and have each conveyor box closed over tightly, and at least six inches clear space over the conveyor, with a good suction fan attached so as to draw the impurities away at the discharging end of each conveyor. Of course an opening should be left at the opposite end of the conveyor that could be regulated to give the proper amount of air necessary to carry of the dust and fluffy, downy beard that is worn off by attrition through the constant action of the conveyors. As the wheat leaves the last conveyor it should be sent to a good, gently-operating brush machine. This mode of cleaning does not wear off the hard, glazy varnish of the berry, nor does it abrade the bran at the lobes of the berry, but it effectually removes the fuzzy and loose volatile matter, and the brushing removes the adhering volatile matter that becomes deposited in the crease of the berry as far as it is possible to do so without splitting the kernel. Mr. Gibson stated the facts of the results in splitting the kernel in his report on wheat cleaning, he says: "Then we have the crease or depression lengthwise of the berry, which always contains a large amount of dirty, dark matter, very injurious to flour." He is quite right as to the dirty, bluish matter in the crease of the berry being injurious to the flour, and I know the kernel can be split longitudinally through the crease and the dirty, bluish, volatile matter removed almost entirely without the further use of brushes. However, I believe that a gentle brushing after the berry is split open would still remove a portion adhering injurious matter, although I have not tested this after-brushing. But I do know that the berry can be successfully split, and by so splitting the germ is liberated in its natural form without being broken up, as is the case when it is rasped off by the harsh action of ending stones. The ending stone means decortication, and nothing less, but hardly to so great or severe an extent as was done by the sandstone decorticators so extensively adopted in many of our best mills a few years ago. At Grand Rapids, Mich., a good milling firm asked my opinion, in 1878 or '74, in regard to a sandstone decorticator that they were then putting in. I freely told them the results they might expect. The manufacturers of that decorticator got ruffled at what I had said, and wrote a severe letter to the Leffel Water Wheel Co., whom I then represented, asking them to stop my expressing such strong adverse opinions. However, my positive convictions were not stifled, as I believed I knew more about cleaning wheat than the makers of that machine would ever learn. It was another delusion and snare, that showed up like a pewter dollar in a mud hole. I have long since found out that I can more surely depend on the true state of the condition of a kernel of wheat or flour, or any of the wheat products, by examining it carefully through a strong microscope than to depend on the naked eye. A good one or two hundred dollar microscope in the possession of every first-class mill owner is the best auxiliary to the true knowledge of milling that he can possess, and it would be a better investment than he could

make any other way about his mill.

I have now disposed of the cleaning of the wheat, as I would prefer to have it done in order to prepare to obtain the best results from it in reducing it to flour and middlings. A great many millers are using heaters, which I think advantageous in certain conditions of the wheat, and it would be well for every merchant mill to have heaters, since they can be used or not, as the nature and condition of the wheat may require. Any good miller can soon learn when the wheat is in condition to be benefitted by the heater, after using and experimenting with heaters a short time.

There are many mills where they use iron rolls for lightly crushing the wheat before grinding. I am satisfied that in high grinding mills where they are working for a large percentage of middlings, the crushing of wheat before grinding is not the thing to do, as it reduces the quantity of middlings and makes too much first flour. It also shapes the wheat, so as to admit the burrs to comminute the bran to too great an extent, makes the first flour "off color," and increases the quantity of low grades, which is already too great in a majority of mills. The quality of the first flour is a sure criterion of one or both of two facts, viz.: that the wheat is too severely scoured or that the burrs are in bad condition. There are several good experimentors at the present time exerting their best efforts towards the reduction of wheat, to a large percentage of middlings, regardless of the quality of the first flour. I claim the making of a large percentage of middlings is desirable, whenever they can be made, and the first flour held up in color, so as not to depreciate too greatly in value. There are many mills to-day making a large per centage of patent flour and bringing their wheat down so low that it barely will pass for more than super. The difference in prices obtained for the patent and first flour is so great that in many cases, if the two grades were mixed together, they would bring a greater profit to the miller than to sacrifice the first flour for the benefit of the patent. The machine or system of machines that can be made to reduce the wheat and hold up the wheat flour to a higher standard than is now done now (no matter whether the quantity of patent is increased or not) is what the trade demands at the present time. Any good, first-class mill can turn out a good patent flour, but so much cannot be said for their wheat flour; and the millers are greatly interested to see whether this cannot be accomplished otherwise than by means of mill-stones. If it cannot, then practical inventors will be compelled to turn their attention to the more perfect construction of the mill-stone and its attachments. While there is but very little room to advance on the present style of building mill-stones, there is vast room for improvement in their action on the grain.

The purification of middlings and the bolting of the different grades of flour are all-important in every mill. Many mills are deficient in the quality of cloth used for both; and this is a part of milling that is the hardest to lay down absolute rules for without an elaborate article, with numerous diagrams, showing the best plans for the many different qualities of wheats. While the same rules for the reduction of wheat are good for all grades and kinds of wheat, the same rules laid down for purifying and bolting spring wheat will not hold good in winter wheat. A system that is perfect on Michigan or other soft wheats, in purifying and bolting, does not hold good in every particular on the harder varieties of winter wheats. Therefore, to properly treat this subject, each kind of wheat must be considered and different plans laid down for each, which would involve much labor and careful statements of all the facts relating to each variety. This is a subject that I hope to treat on in the near future.

In conclusion, I believe that mill owners would be greatly benefitted by sending their head millers off on a tour of inspection about once a year. I know a few of the progressive millers that have been doing this for the past three or four years, and to my personal knowledge, in several instances, it has resulted in far better stone-dressing than had previously been the rule in the mill, and better milling throughout. It stimulates a pride and interest which is to the benefit of every mill owner who sends his miller around. Head millers of this country should form a brotherhood and hold annual conventions, in conjunction with a convention of flour mill machinery men, independent of the Millers' National Association, where they could be brought in contact with the vast and varied collection of the different kinds of machines used in the manufacturing of flour. It would be well to admit the mill owners as members, that they might take part in the different discussions.—*American Miller.*

Room for Invention.

We frequently hear the remark that the time will soon come when the course of invention will be run; when, like Alexander, inventive genius will weep, because there are no more worlds to conquer. The fact that iron fingers have in so many branches of industry been made to perform tasks once done by sinew; that electric throbbings have outstripped the fleet messenger in business affairs, and the iron horse with food of burning coals carries the love-letter in the mail-sack, where once the oat-fed country steed galloped along the hard-beaten road. These facts are impressive and suggestive, but not convincing on the subject of an ultimate limit to inventive usefulness or inventive power. The hall of progress in rolling along has wrapped about it many a layer of ideas formed into tangible facts; but the periphery grows, and the capacity for enlargement grows with it. As the circle of knowledge widens, the illimitable space beyond still more increases, and there is both more to learn, and greater ability to learn it. If the needs of man were the sole gauge of his demands, there might well be a point at which invention, satisfied with granting all needful things, would be compelled to rest. But "to want" means both "to lack" and "to desire;" the food and shelter and clothing absolutely requisite develop into luxuries of palate and aesthetic taste. The rude needle of bone that sewed with sinew the bear-skin cloak and made of it a definite garment, was an invention that might have sufficed in its line, had the skin garment satisfied; but demand and supply are commensurately progressive; each surpasses each, onward in the march of progress; and now we have that household companion, the sewing machine, purring like a kitten, while basting, sewing, hemming, gathering, tidily at high speed; this modern sewing machine being as legitimately the development of the bone needle, as the fashionable garment of to-day is the outgrowth of the fig leaf of Eve and the skin covering of her son. Our wants have become artificial. With successive generations, luxuries develop into customary grants and eventually become necessities. Our condition is ameliorated, and hence our appreciation sharpened, while certain faculties have become dulled and invention must supply their places or their deficiencies. Where invention has produced an effect, it is for invention to extend and perfect it. Thus, in every walk of life it is for cunning brain and deft fingers to effect new combinations or perfect the old, fearless of thwart or limit. In proof that with improvement criticism becomes more keen, and demands more imperative, we have only to look about us for promising fields to engage the inventor. While the harvest of golden grain no longer falls before the classic sickle, and the hay maker has ceased to be a picturesque inspiration for the poet—the root-crops still demand personal delving and grubbing, and the ripened fruits still call for human pickers to pluck them one by one. For the inventors who would devise a mode removing half the blossoms from a peach tree, without injuring the buds which form the next year's bearing stems, there awaits a magnificent prize. Ramie and other fibers still defy the textile art; and the gorgeous aniline dyes fade with a summer's sun. Household fires, once synonyms of health and cheerfulness, are now gloomy and noxious monuments of our heedlessness of things sanitary. Those domestic conveniences that should minister to our comfort and well-being, poison us insidiously but surely. Our vaunted gaslights blacken our paint and kill our window plants, while in the streets, the pipes which lead the gas destroy our shade trees. Our sewers and our drains are confounded in name and in use, and both of them are poisonous. Our chimneys breathe forth smoke which is unconsumed fuel, and hence wasteful. Our steam boilers, with partly consumed fuel, supply our engines with wet steam, and the engines (whose cylinders have to be supplied with oil, through faulty design and workmanship) waste part of the remainder. Our horses, shod with no regard to humanity or tractive effect, draw wagons or cars which rattle our teeth out, on roads or rails which rattle the vehicle to pieces. The explosives long ago were constrained to throw hurtful missiles, have but in one instance—blasting—been employed in peaceful work; if we may except the gun powder pile driver, the precursor of a long line of explosive motors yet to come.

For these and hundreds of other evils, inventive genius must provide the remedy; and as new and artificial wants arise and develop into necessities, upon the inventor, even in the vanguard, devolves the duty of exploring the land of the possible and providing for the legions of the actual.

It might be said that science falls into the ranks of knowledge, and art after art is added to the forces of man, the field of true invention would narrow, and that of improvement, combination and application correspondingly widen. And this distinction may not perhaps be improper to draw or inappropriate to apply. Certain it is, that as observation and experience lay down the facts, and reason deduces therefrom the theories and evolves from these again the laws which govern things and forces intangible, the plane of the inventor will rise higher and higher, and his usefulness will never diminish. It is to him that races unborn, nations unformed, countries unexplored, look to for their betterment and the achievement of their substantial welfare. Through him the antagonism between man and man—the foul distinctions of caste and class—will be swept away; and better men, under better lives and higher pleasures and comforts, achieve the destiny written for them in the days when the rocky ribs of this earth were formed.

UNITED STATES MILLER.

PUBLISHED MONTHLY.

OFFICE, 62 GRAND OPERA HOUSE, MILWAUKEE, WIS.
Subscription Price, \$1 per year in advance
Foreign Subscription, \$1.50 per year in advance

MILWAUKEE, JULY, 1879.

THE UNITED STATES MILLER has now commenced its seventh volume, and has become universally acknowledged to be one of the most valuable milling journals in America, both for the purpose of transmitting knowledge on milling and mechanical subjects and as an advertising medium for introducing and selling all kinds of modern milling machinery. It is our aim to meet the wants of our patrons, whether manufacturers or consumers. Our editorial course will be entirely independent, and we shall do our best to give our readers the benefit of the latest important news on subjects pertaining to the objects of this paper. Our circulation and advertising patronage cover all sections of the country. We do not deal in machinery ourselves, and consequently have no "axes to grind." We cordially invite all those who have already patronized us to continue their patronage, and those who have not to try our columns. We append herewith our

ADVERTISING RATES FOR 1879.

	1 mo.	3 mos.	6 mos.	1 year.
One inch card.....	2 00	5 00	10 00	20 00
Two ".....	4 00	10 00	20 00	40 00
Four ".....	8 00	20 00	40 00	80 00
One-half col. (8 inches).....	10 00	25 00	50 00	100 00
One fourth page.....	20 00	50 00	100 00	200 00
One-half page.....	40 00	100 00	200 00	400 00
One page.....	80 00	200 00	400 00	800 00

Size of page, 12x15. Length of column, 16 inches. Width of column, 2 1/4 inches; 4 columns to each page.

Business editorial matter per line, 30 cents. If over 50 lines, 25 cents.

Illustrations charged for in proportion to space occupied.

Advertising for Millers wishing situations, or millers wanting to engage employees, 50 cents.

MILL FOR SALE advertisements, \$2 each insertion.

We have recently published a *List of Names and Post-Office Addresses of the Flour-Mill Owners of the United States and Canada*, which is of great value to those who desire to communicate by circular with American mill-owners. The price is \$5 per copy, post paid. Cash must accompany the order.

We have also lately published a *Saw and Planing Mill Directory of the United States and Canada*. Price, \$5.

Subscription price to the UNITED STATES MILLER, \$1 per year.

M'Lean's Millers' Text Book, which every miller should have. Price by mail, 60 cents, post paid.

Kopp's Easy Calculator, which every business man should have in his pocket or on his desk. Price by mail, post paid, \$1.

Our Job Printing Department is one of the finest in the State, and particular attention is paid to all kinds of commercial work, which we can do on the most reasonable terms. Parties desiring to publish catalogues, circulars, etc., should send for estimates.

Address all communications to the
UNITED STATES MILLER,
62 Grand Opera House, Milwaukee, Wis.

A FEW years since there was a firm of millers in Manchester, England, named Skin & Bone.

M'LEAN'S Millers' Text Book and the UNITED STATES MILLER, for one year, for \$1.25. Order now. Send money or postage stamps.

LESSEPS, the great French civil engineer, will turn the first sod in the construction of the Darien Ship Canal January 1st, 1880.

The first barrel of flour made from the crop of 1879 was received in New York May 13th, from Americus, Georgia. The wheat was threshed May 2d.

E. C. NOTBOHM, of the firm of Notbohm Bros., of Janesville, Wis., paid us a visit during the month. He reports renewed activity in the middlings purifier business.

READ the new advertisement of L. J. Mueller, manufacturer of elevator buckets. He has no traveling agents, and sells at as close figures as it is possible to do and furnish a first-class, reliable bucket. Examine his price list.

MILLARD READE, of Liverpool estimates that the world is at least six hundred million years old. He comes to this conclusion after investigating it much less than one-half the time.

We will send a copy of the MILLERS' TEXT BOOK, by J. M'LEAN, of Glasgow, Scotland, and the UNITED STATES MILLER, for one year, to any address in the United States or Canada, for \$1.25. Price of Text Book alone, 60 cents. Send cash or stamps.

THE UNITED STATES MILLER has the largest circulation of any milling journal published in America, and was the first milling journal started in America entirely independent of connection of interest with some machine or mill-furnishing establishment.

We hope all who receive sample copies of the UNITED STATES MILLER will favor us with their early subscription. The price—one dollar per year—is a mere trifle, and ensures you a first-class paper containing a great quantity of matter of direct interest to your trade. Do

not delay, but send your order now. Entering, go-ahead millers cannot afford to be without the current milling literature of the day.

IMPORTANT NOTICE.

TO THE PARTY RECEIVING THIS PAPER WHO IS NOT ALREADY A PAID SUBSCRIBER.

We hereby extend to you a cordial invitation to become a subscriber to the UNITED STATES MILLER. We shall endeavor to make it of the greatest possible use and benefit to the milling fraternity, and no mill should be without it. The best talent that we can obtain in this and other countries will contribute to its columns, which will also be enriched by carefully translated articles on subjects of interest to the craft. Subscription price, \$1. Enclose money or stamps in an envelope, seal carefully, and send at our risk. By return mail you will receive a receipt therefor. Address

THE UNITED STATES MILLER,
Milwaukee, Wis.

Keeley Again.

Keeley's wonderful motor has proved a failure, and his \$6,000 generator has been broken up and sold for old iron—but he was not discouraged—no, nor is he going to be as long as he can find men with money willing to invest in chimeras. He has it now—solid—pressure to the square inch of 20,000 pounds, and you only have to move a little lever 12 inches long so as to open and close a 4-way valve placed within the "cross-bar" of the generator, a small quantity of water having been previously "squirted" into the generator by means of a small rubber bulb. The substance evolved, which produces this immense force, he calls "inter-molecular etheric substance," and the power used to drive, "a vibratory engine." Look out, gentlemen—keep out of the way of the "inter-molecular substance."

Ohio State Millers' Association.

PRESIDENT'S OFFICE, AKRON, O., June 13th, 1879.—The Third Annual Convention of the Ohio State Millers' Association, will be held in the city of Akron, Ohio, commencing at ten o'clock a. m., on Tuesday, July 6th, 1879. A reorganization of the Association will probably take place, and a new constitution be adopted to harmonize with the constitution recently adopted by the National Association. Also a member of the National Executive Committee is to be elected. These, and other subjects of general interest to be considered, should secure the attendance of ALL members. We also invite all millers who desire to join our Association, to be present.

FRED. SCHUMACHER, Pres.

ROBERT COLTON, Sec.

The Editor's Diary.

The editor of a Texas paper gives the following figures from statistical memorandum of his life:

Been asked to drink.....	11,362
Drank.....	11,362
Requested to retract.....	416
Didn't retract.....	416
Invited to parties and receptions by parties fishing for pulls.....	3,333
Took the hint.....	33
Didn't take the hint.....	3,300
Threatened to be whipped.....	174
Been whipped.....	0
Whipped the other fellow.....	4
Didn't come to time.....	170
Been promised whisky, gin, etc., if we would go after them.....	5,610
Been asked what's the news.....	300,000
Told.....	23
Didn't know.....	200,000
Lied about it.....	90,977
Been to church.....	2
Changed politics.....	32
Expected to change still.....	60
Gave to charity.....	\$5.00

A Patent Office Circular.

The following circular explains itself and will be of interest to inventors:

DEPARTMENT OF THE INTERIOR, U. S. PATENT OFFICE, Washington, June 12, 1879.

No power of attorney executed after July 1, 1879, purporting to have been given to a firm or copartnership, will be recognized, either in favor of the firm or of any of its members, unless all its members shall be named in such power of attorney.

H. E. PAINE, Commissioner.

Approved: C. SCHURZ, Sec'y of the Interior.

"WHAT is the chief use of bread?" asked an examiner at a recent school exhibition. "The chief use of bread," said the nrohin, apparently astonished at the simplicity of the inquiry, "is to spread butter and molasses on."

WHAT THEY CALL IT.—The horny-handed workman calls it "pay," and the skilled mechanic, "wages;" the city clerk, "salary;" the banker, "income;" a land owner, "revenue;" a lawyer, "fees;" a burglar, "swag;" but it all comes to the same thing at the end of the week.—*Ex.*

Small Advertisements.

Many an inventor of some really valuable thing has hesitated about advertising for lack of the pecuniary means of putting in a large advertisement in first-class papers, but it is not absolutely necessary to have a large advertisement to increase your business, as we will presently illustrate. Large advertisements will, as a matter of course, catch the attention of more readers than the small ones, but especially in the milling business at the present time, when every energetic miller is striving to improve, there are thousands who scan carefully every line published in a journal like the UNITED STATES MILLER, devoted to the interests of the trade. To succeed in selling an article it must, in the first place, be possessed of intrinsic value and positive merits. Having these qualifications a small advertisement will introduce it, and as the manufacturer gets able he can of course make a greater display and attract greater trade. To illustrate: Mr. George Walker, of Hamburg, N. Y., is the owner and manufacturer of a valuable Belt Tightener. He has advertised in a modest way in this journal for about a year, the merits of his Tightener have become widely and favorably known. He has just sent us, unsolicited, the following letter complimentary to this journal:

HAMBURG, Erie Co., N. Y., June 23, 1879.—*Edit. of United States Miller*.—DEAR SIR: In justice I am prompted to say, that during the time I have advertised my "Walker's Belt Tightener" in your paper, formerly the U. S. MILLING AND MANUFACTURING JOURNAL, and now the U. S. MILLER, I have by that means received orders from various parts of this country, East, West, North and South, and also from England. I therefore regard it as an excellent medium for advertising milling goods. Respectfully yours, GEO. WALKER.

THAT BERRY STORY.—The papers are rehashing the old Berry story, and they don't conclude it in accordance with facts. This is the correct version: A celebrated comedian arranged with his green grocer, one Berry, to pay him quarterly; but Berry once sent in his account long before the quarter was due. Thereupon the comedian, in great wrath, called upon the grocer, and said to him: "I say, here's pretty mull, Berry; you've sent in your bill, Berry, before it is due, Berry. Your father, the elder, Berry, would not have been such a grocer, Berry; but you needn't look so blue, Berry; for I don't care a straw, Berry; and if you come here before June, Berry, I'll kick your rump, Berry, until it is black, Berry."

THE Minneapolis millers have a joint stock association for the purpose of buying up the best wheat raised in Minnesota, so that there may always be a stock on hand to keep the millers in material to run on. The Milwaukee millers might do well to follow their example. It is true that ordinarily the elevators of this city contain much more than sufficient for any demands our millers might make, but under such extraordinary circumstances as those which now control the wheat market, it seems for the once to be a question of either shutting down for a while or running low grade wheat. An organization of the millers of Milwaukee could certainly do no harm, and we believe would be beneficial.

THE Becker brush, made by the Eureka Mfg. Co., Rock Falls, Ill., has become such a necessity in merchant mills that the firm write us their trade has fully doubled from previous years. The demand is so great for them they have been compelled to double their force to keep up with orders so as to ship promptly. The great success of this machine advantage over all other brushes is that it has a solid cone-shaped brush, which has double the brush surface of any other machine, and its cone shape prevents the wheat from falling directly through as is the case to a large extent in a straight cylinder or sectional brush. It can be run from top as well as below. Parties ordering should state where they wish to run it from. See their advertisement on front page.

MESSRS. JAMES LEFFEL & Co., of Springfield, Ohio, have favored us with their beautiful catalogue for 1879, of water wheels and the Bookwalter engine. Their water wheels are world renowned and need no word of commendation from us or anybody else. Over 7,000 of them have been put into practical use. The Bookwalter engine, also manufactured by this firm, is meeting with marked success wherever it has been introduced. It is manufactured to meet the demand for light power. The engines and boilers are calculated to supply from 8 to 64-horse power. They are neat in design, substantially made, and very

reasonable in price. Messrs. Leffel and Co. will be pleased to furnish parties desiring to purchase, with their new catalogue for 1879.

WE lately received a copy of the *Blanchester* (Ohio) *Press*, and in it read a very neat notice of the well-known bolting reels manufactured, by Chas. B. Slater, of Blanchester, Ohio. Millers who have not yet done so, should write to him for one of his descriptive circulars.

THE Geo. T. Smith Middlings Purifier Co., of Jackson, Mich., are erecting a new factory in place of the one recently burned, two stories high and 60 feet wide by 200 in length. They have a large force of men at work in temporary quarters building middlings purifiers, so as to fill all orders promptly.

THERE is but one country to which we do not export any of our hog products, and that is Turkey in Europe. Here are the total exports for the last nine months:

	Pounds.	Value.
Bacon and hams.....	579,448,328	\$40,963,948
Lard.....	232,042,308	16,497,872

RUSSIA, Germany, Hungary and France are open fields for enterprising American elevator builders. The last number of *Die Muehle*, published at Leipzig, has an illustrated article on the subject. To the best of our knowledge Pesth, the great milling centre of Europe, has no elevator proper worth speaking of.

JOHN F. DILLON, Judge of the U. S. Circuit Court for the Eighth Judicial district, and well known to the milling fraternity by reason of his connection with recent patent cases, has sent in his resignation to take effect Sept. 1st, 1879. He will take a position in the faculty of the Columbia College, N. Y., which commands a higher salary with less arduous labor.

MESSRS. JOHN T. NOYE & SONS, the well-known Buffalo mill furnishers, have about removed all traces of the fire which scorched them somewhat last month. Their business has scarcely suffered any by the unwelcome visitation, and they are now prepared to fill all orders as fast as possible after receipt. Their valuable and extensive line of patterns were absolutely uninjured.

CAWKER didn't think the Wisconsin millers' meeting worth attending. He preferred to get his report from the NORTHWESTERN MILLER. And he didn't even dare venture on the streets for fear he might catch a "shark." —N. W. Miller.

This too, after getting the proofs of the report from the office of the UNITED STATES MILLER. Never mind Al—just wait till we take that fishing excursion.

WE call the attention of our readers to the advertisement of the Peninsula Stone Co., of Akron, Ohio. The stones furnished by them are for the purpose of ending wheat or hulling oats. Our readers will do well to refer to Jos. F. Gent's report at the Millers' Convention, published last month, and read what he says on this subject. Ferd. Schumacher, one of Ohio's leading millers, is President of the company.

REBELLIOUS MINNESOTA MILLERS.—The millers of Minneapolis met June 23d, and requested the President of the Minnesota Millers' Association to call a meeting of the millers of the State, for the purpose of repudiating the recommendations of the National Association in regard to the Smith and Downton patents, believing them to be utterly fraudulent. They are disposed to fight them to the bitter end.

OUR readers will do well to read the advertisement of C. Rakes, of Lockport, N. Y., manufacturer of Jewell's adjustable separator, Rake's improved upright and horizontal bran duster, improved adjustable brush and beater, smut machine, buckwheat hullers, etc. Mr. Rakes also deals in all kinds of flour mill machinery and supplies. Write to him for his latest circulars and price lists, mentioning that you saw his advertisement in the UNITED STATES MILLER.

German Millers' Association.

The twelfth annual session of the German Millers' Association was held in Berlin, June 21st—25th. One of the most important features of their session is the complete exhibitions of flour-milling machinery, for which ample accommodations are provided, and inventors and manufacturers warmly encouraged to exhibit their productions. The programme sent us is very full and complete, and shows that ample arrangements for social enjoyment were made. Herr Jos. J. Van Den Wyngaert, the President of the association, presided.

GRAIN.

Peculiarities in its Normal and Manufactured State.

An Investigation Under the Microscope—Showing the Adulterations and Natural Evils to which It has been Subjected.

A COMPLETE INVESTIGATION OF THE SUBJECT BY ONE OF THE LEADING CHEMISTS OF EUROPE.

Flour in General—Wheat Flour—Rye Flour—Barley Meal—Oat Meal—Indian Corn—Rice Meal.

[Translated from the German of Dr. Herman Klencke expressly for the UNITED STATES MILLER, cuts reproduced by our special engraver from the original.]

[Continued from May number.]

As an illustration, we here give in fig. 15 a picture of wheat flour when mixed with rice meal, in fig. 16 with maize, and in fig. 17 with bean flour. But there are also methods of discovering the said adulteration by a chemical process. For those buyers and sellers who already possess some skill in examinations of this kind, or who take pleasure in arriving at a safe and fully exhaustive conclusion by a scientific method, we here mention first the method of Boland, which is based upon a quality which Gay Lussac has made known, namely, if a mixture of wheat flour and potato starch is carefully ground in a mortar, the much larger starch particles of the potato will be ground much sooner than the smaller and flat round ones of the wheat, and when water is added to it, a liquid is produced which is rendered blue by iodine water, while, by exactly the same treatment, pure wheat flour will furnish a liquid that will not turn blue by iodine, or will at least become of a color clearly distinguishable from the former. In consideration of this fact 25g. of the flour which are to be examined are taken. The glutinous contents of it may previously have been tested on another portion of it in order to be able to judge of its quality in general, this is done, as has already been mentioned, by separating the gluten over a hair-sieve of fine muslin cloth, while it is being washed, and constantly kneaded from the starch which runs through. [Fig. 18.] Good flour must contain from 10 to 12 per cent of gluten, and from 65 to 73 per cent of starch. The above mentioned 25g. of this flour are mixed in a cup, or porcelain dish, with 12.5g. of water, which is added slowly and in drops and is stirred with a glass tube, then this mass is kneaded in the hollow of the hand, and thereby the entire contents of starch in the mass are washed out over the aforementioned fine sieve, or (according to Boland's method) in a glass or porcelain vessel, which is half filled with water so that only the pure gluten will remain. If the flour is poor the gluten will appear granulous, and it is difficult to gather it in the hand. After it has been thoroughly washed out, the gluten which has been obtained is now weighed, so as to ascertain at the same time how much of it the flour contains. The 25g. of flour, if it is pure and good, must accordingly contain from 2.5-10 to 3½g. of gluten. If less is obtained that alone will be sufficient to create suspicion about the quality of the flour. The water containing starch, which is in the bowl, is now stirred with a glass tube and poured into a champagne glass where it is left untouched for one hour; during this time a sediment will form itself at the bottom of the glass, which must not be moved or touched, while, by means of a siphon, the water which has accumulated over the sediment is very carefully removed; two hours later this operation is repeated, for the starch still retained a certain quantity of water from which, by this time, it has gradually been separated. The mass which has now formed itself at the bottom of the glass, will, by a careful examination, be found to consist of two different layers; the upper, which is of gray color, consists of separated gluten which had been washed out during the process and had thereby lost its elasticity, and of albumen; the lower layer, of a dull lead color, is starch. With the greatest care the upper gray layer is now removed with a tea-spoon, and if a little should remain just above the starch it is not necessary to remove every particle of it. Now the untouched layer of starch is left to dry so that it will become wholly compact, in this condition it is carefully loosened, with the tip of a finger or knife, from the inner wall of the glass, so that the layer (in the conical shape which it has received from the glass) can be taken out by turning the glass over on a glass plate. To dry the mass still more thoroughly this cone of starch is placed on a dry plate of gypsum.

If the flour has been pure and unadulterated this mass of starch will appear wholly homogeneous, but if it contains potato starch which is much heavier than wheat starch, this will have sunk first, and consequently will lie at the bottom, that is, at the apex of the cone of starch, while the wheat starch will form the wider base. If with a knife thin layers are now taken off one by one, every one weighing about one gram (which always corresponds in weight to 1-25 g. of the examined flour), every layer which has been cut off is ground separately and successively in a mortar of agate with a pestle, at first dry and subsequently with some cold water, the liquid is then strained and some concentrated tincture of iodine is added, it will change its color to blue if it contains potato starch; while pure wheat starch will only acquire a yellow or light reddish-violet hue. If the starch in the mortar is grated too long, it will become too fine to be sufficiently blue colored with iodine, and the experiment may lead to wrong conclusions; the mortar of agate has been chosen, so as not to have too smooth surfaces, which like glass or porcelain, let the starch particles pass over them without pulverizing them. By this method of examination one is enabled approximately to estimate the relative quantity of the potato-flour which has been added, by carefully taking off the upper gray part of the cone of starch from the lower and white part, and this gradually and in layers 1 g. in weight, and every single layer examined with iodine in the prescribed manner. If the layers now change to a lighter yellow or a reddish-violet color, we have before us the wheat starch of the base of the cone.

Every layer of the cone of starch which turns blue contains potato starch. If it is known now that every layer of 1 g. corresponds to 1-25 of the examined flour, a calculation of the fraudulent admixture is easily made. If for instance 5 layers (of 1 g. each) of the cone of starch have been found to contain potato starch, 5 times 1 g. of it will be contained in the starch, or in 25 g. of it, 5 grams of the potato starch will be found. If the base of the cone consisting of wheat starch is now weighed, and added to the weight of the potato starch, we have the whole contents of starch of the flour, and by dividing it by the amount of potato starch, we find the percentage of the fraudulent admixture. In taking off the layers the relative quantity of the potato starch which has been added may generally be

judged of merely by the eye. As has been said before this examination requires some skill and practice, but if once obtained, which is not difficult, it enables to judge exactly of the amount of the fraudulent admixture. This method of Bolands, Lecanu has modified somewhat so as to discern the very finest admixtures of potato starch, and that is 1-100 of its weight. This method we also recommend as a very practical and exact one. After a certain quantity of flour has been made into well-kneaded dough (with 40 per cent of its weight in water) the gluten in it is separated in the manner

already mentioned (fig. 18), the water which has been used for washing out the starch is collected and stirred so that all particles it contains are well distributed; then the turbid water is passed through a fine hair sieve so as to retain the remaining particles of gluten and bran, and is poured into some conical glass (a champagne glass for instance). Without waiting for the water over the sediment which is now forming shall clear itself, it is poured off and set aside as soon as a sufficiently great sediment has been formed. Then

this sediment is dissolved in pure water, this is also allowed to settle until the starch particles which are distributed in the water have all settled. The same process is now applied as in the first case, the turbid water is poured off and the sediment is again dissolved in pure water. This is repeated from five to ten times with the sediment, which of course is of less quantity every time. This sediment is composed of different parts. The last slowest sediment contains almost nothing but small particles of wheat starch, the middle sediments contain large particles of wheat starch and small particles of potato starch, the earliest, most rapid one, is composed especially of large particles of potato starch and a small quantity of little potato starch and large wheat starch particles. If this latter sediment is examined with a magnifying glass, it will show a lustre like the finest kernels of beet-root cassonade. If alkaline water is added (100 parts of water and 1.25 parts of kali), most of these small glossy kernels or balls at some one point of their surface will show a circular opening of very small diameter. If the sediment is dissolved in alkaline water (in quantity 80 times its weight), and a little more kali is added (about 1.75 parts to 100 parts of water), it will be transformed to a translucent uniform jelly, which, when spread

on a glass plate in thin layers can easily be colored with a watery solution of iodine, and when acidized with muriatic acid it occasions blue-colored blisters which are from five to six times greater in diameter than the starch particles. This method, however, is also somewhat circumstantial and less suitable for the use of bakers and dealers in flour. For this purpose we can recommend the following method for its greater practicability. In a mortar a mixture of 16 parts in weight of the flour and 16 parts of pulverized sand-stone is grated for about five minutes, and in small quantities, so much water is added that a uniform dough is formed, which is wholly dissolved in the water that is gradually applied. (If for instance 16 g. of flour and just as much pulverized sand-stone are taken 1-16 liter of water will suffice to dissolve the dough.) This solution is filtered, about 1-32 l. of it are taken to which just as much solution of iodine is added (8 g. of iodine in 500 g. of distilled water). If this liquid is obtained from good, pure wheat flour, it will acquire a rose-colored hue from iodine; but if the liquid contains potato starch it will become blue and lose this color very slowly, while the rose color of a pure solution of wheat starch will disappear the more rapidly when the wheat is reaped in a wet season or the flour ground in moist weather.

[To be continued.]

Grindstones.

What can disable a machine shop more effectually than to destroy the grindstone? Unless the loss were supplied by the modern substitute, the emery grinder, to destroy the grindstone would be to wreck the shop. A thorough study of the subject will develop more requirements than many think, and much ingenuity or skill in designing might be displayed in working out the problem. It should be strong, simple and clean; the trough expanded to catch as much as possible of the drip water and grit; a movable shield securely hinged to keep the water from splashing, and yet permit the stone to be used from either side; rests provided upon which to rest tools and the rod for turning the stone, these rests being arranged to move toward the center as the stone wears smaller. The bearings should be generous in size, proper provisions being made for oiling without washing the grit into the bearings with the oil, and the ends of the bearings being protected by some device which effectually prevents the entrance of the grit. The stone should be secured to the shaft by nuts and washers, and the washers fixed so that they can not turn with the nuts as they are screwed up or unscrewed. In hanging the stone, great care should be taken to hang it true sidewise, not only for convenience in using, but because a stone that is not true sidewise can never be kept true edgewise.

Suppose a stone to run one-fourth of an inch out of true sidewise, and while in motion draw a line around it within three-eighths of an inch from the edge, on an average. From this line there would be but one-fourth of an inch of stone on one side and one-half on the other. If you had a stone only this in thickness—that is, a stone one-fourth of an inch thick on one side and one-half of an inch thick on the other—would not the one-fourth inch side wear away faster than the other? That is exactly what it does on that side of the thick stone, only the thicker the stone and the less it is out of true the less it wears.

To TEMPER MILL PICKS.—1. Take two gallons rain water, one ounce of corrosive sublimate, one of sal-ammoniac, one of saltpeter, one and one-half pints of rock salt. The picks should be heated to a cherry red and cooled in the bath. The salt gives hardness, and the other ingredients toughness to the steel; and they will not break if they are left without drawing the temper. 2. After working the steel carefully, prepare a bath of lead heated to the boiling point, which will be indicated by a slight agitation of the surface. In it place the end of the pick to the depth of one and one-half inches until heated to the temperature required. The principal requisites in making mill picks are: First; get good steel. Second, work it at a low heat; most blacksmiths injure steel by overheating. Third, heat for tempering without direct exposure to the fire. The lead bath acts merely as a protection against the heat, which is almost always too great to temper well.

Bennett, Dewey & Burt, of Rochester, Minn., propose to build a \$50,000 flour mill at Bismarck, D. T.

The Rockdale flouring mills near Dubuque, Ia., are being rebuilt.

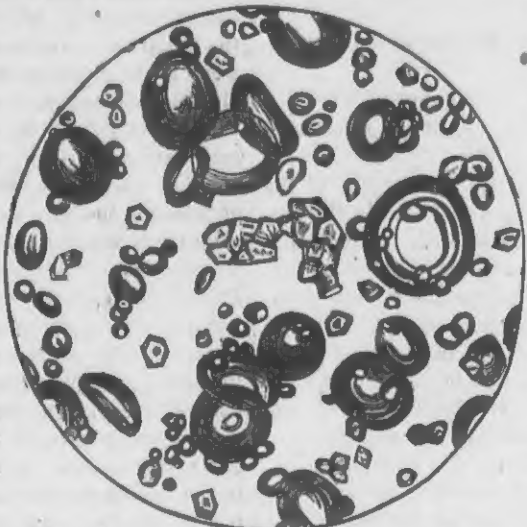


Fig. 15. Wheat flour mixed with rice flour. Magnified 420 times.

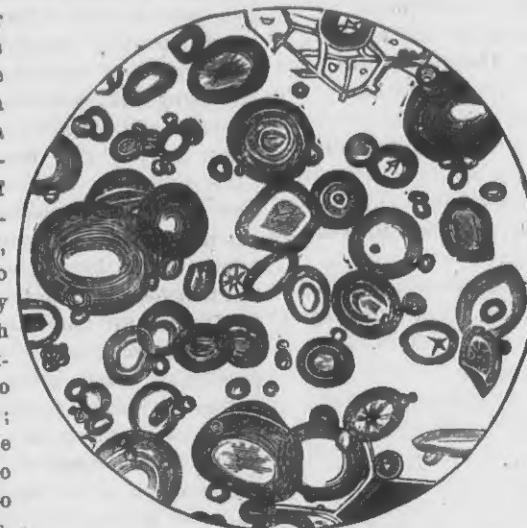


Fig. 16. Wheat flour adulterated with corn flour or corn starch. Magnified 240 times.

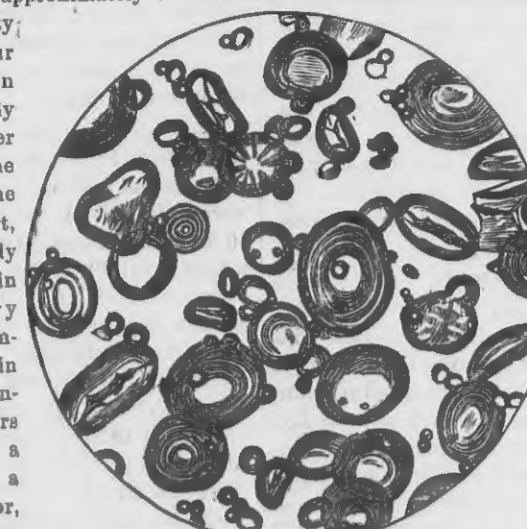


Fig. 17. Wheat flour adulterated with bean flour. Magnified 420 times.



Fig. 18. Washing out and separation of the gluten from the starchy portion of wheat flour.

Iowa Millers Association.

PROCEEDINGS AT THE JUNE MEETING.

The Iowa millers have a sort of dual organization—the Association proper being to consider matters generally for the good of the trade, and the Defense Association is for the express purpose of defending the members against the claims made by patentees for infringement of patents. Both of these organizations met at Marshalltown, June 4th and 5th, in the Court House at that place. About twenty-five members from various sections of the State were in attendance. The meeting was called to order by President J. J. Snouffer, of Cedar Rapids, who made a short address. He explained the great importance of the meeting, and urged that prompt and decisive action be taken by the members present upon the question of adopting a constitution and completing a thorough and effective organization. After the reading of the minutes of the January meeting at Des Moines, Secretary Reed stated that no new members had been admitted since the last meeting, that there had been no applications. President Snouffer advocated the consolidation of the State Association and the Defense Association, and that the new organization become a part of the National Association. Upon motion of Mr. Sharp, of Wilton, those present who were not members of the old Association were permitted to join. Robt. Wight, of Iowa Falls, availed himself of the privilege and became a member. The Committee on Constitution asked further time in which to prepare their report. An informal discussion was held concerning the action of the Sub-Executive Committee of the National Association at the Chicago meeting. Many expressed their dissatisfaction in unmeasured terms, while others expressed themselves satisfied, and were in favor of adopting a constitution similar to those adopted by the Minnesota and Missouri Associations. D. B. Knight, of Boone, finally moved that a committee of three be appointed to devise plans for future action. Carried. D. B. Knight, G. F. Weist and C. H. Peters were appointed, and the Convention adjourned until

2:30 P. M.

At the above hour the Convention was called to order. The Committee reported in favor of consolidating the regular State Association with the Defense Association. Adopted. After a lengthy discussion concerning the advisability of being or not being a part of the National Association. A joint committee of six, three from the State and three from the Defense Association, were appointed to prepare a new constitution. This Committee consisted of Messrs. Wright, Ellerston, Hutchcroft, Knight, Serrin and Weist. The Convention adjourned until

5 P. M.

At this hour the State Association was called to order, and majority and minority reports were presented. Mr. Knight's majority report recommended the consolidation of the two organizations as an independent State Association, and presented a proper constitution for such purpose. Mr. Serrin's minority report favored the consolidation, and advised the adoption of a constitution such as had been adopted in Missouri and Minnesota, and that they remain a part of the National Association.

It was moved that the minority report be accepted, and that the constitution be read by sections.

Mr. Sharp moved as an amendment that a section of each constitution be read alternately, and the best from both adopted. Motion then carried as amended.

Mr. Sharp moved that a vote be taken to ascertain who were in favor of remaining with the National Association. The motion was carried, and a majority voted in favor of remaining.

Upon motion of Mr. Weist, the vote to read the constitution by sections was reconsidered, and the Convention then adjourned until 8 o'clock to meet at the Boardman House.

The Convention was called to order at 8:30 O'CLOCK.

Upon motion of Mr. Hammond, the Convention took up the constitution submitted by the minority of the joint committee and proceeded to read it by sections. Each section was read, discussed, and adopted, substantially as presented. After the reading by sections Mr. Hammond moved that the constitution be adopted as a whole. The motion was carried unanimously.

Upon motion of Mr. Serrin the Convention proceeded to the election of officers to serve until the next annual meeting. The following officers were elected:

President—J. J. Snouffer.

Vice-President—H. Hammond.

Secretary and Treasurer—J. R. Serrin.

Executive Committee—J. R. Serrin, H. Hammond, G. F. Weist, F. J. Woodbury.

Delegate to the National Association—J. R. Serrin.

Upon motion of Mr. Hammond the Convention adjourned until

9 A. M. THURSDAY.

The Convention was called to order at 9 A. M.

Mr. Knight moved that the action of the Convention in adopting a constitution the previous evening be reconsidered. A long and lively discussion followed which showed that the advocates of an independent State Association, and the champions of the National Association were farther than ever from a compromise. The motion to reconsider them was carried. This effectually settled the question of consolidation in the negative.

Mr. Knight now moved that a committee of three from the State Association be appointed to prepare a new constitution for that body; the motion was carried and the President appointed as such committee Messrs. Hammond, Ireland and Knight. The Convention then adjourned until

1:45 P. M.

The Committee on Constitution recommended the adoption of the old constitution without amendment. The report was unanimously adopted, and the Millers' State Association then adjourned *sine die*.

The Defense Association was now called to order and lost no time in adopting a constitution similar to that adopted by the Minnesota Association, and with the following sections added:

Sec. 11. The following persons shall act as officers of this Association until the regular annual meeting in January, 1880:

President—J. J. Snouffer.

Vice-President—H. Hammond.

Secretary and Treasurer—J. R. Serrin.

Executive Committee—G. F. Weist, H. Hammond, F. J. Woodbury, J. R. Serrin.

Member National Executive Committee—J. R. Serrin.

Sec. 12. This constitution may be altered or amended at any annual meeting by a two-thirds vote of all the members present.

Mr. Weist moved that the Treasurer be required to give a bond of \$2,000; seconded and carried unanimously.

Upon motion of Mr. Sharp the Secretary was authorized to send a copy of the new constitution to all members of the old Defense Association for signatures, and to notify all other millers in the State by postal card.

Upon motion of Mr. Hammond, the Convention adjourned *sine die*.

A CLEAN SWEEP.—It was a sad looking tramp, with a pained expression of face, that entered a Sutter street bar-room the other day, holding in his hand a small, battered red canister. "Look at this," he said sorrowfully. "I went into a gun shop and begged for something to eat, and the man handed me this can of powder. He said I could go shooting—a starving man go shooting. Just think of it."

"Well, mizzle," retorted the barkeeper, who had just set up four fancy drinks for a row of customers.

"I pledge you my word," said the vagrant, holding the can within an inch of the stove, "I'm so miserable, I've almost a mind to blow myself up."

"Dare you to do it," said one of the bystanders, winking at the crowd.

The wrecked party gave a sad, lingering look at the poured out liquor, as that he might never behold again, and tossed in the can.

The yell that the whole crowd gave as they started for the other side of the street was heard on Telegraph hill. When they fled in about ten minutes after the empty can did not explode, there were four empty glasses on the counter, the lunch table was an empty mockery, and the till looked like a savings bank on the day after a really large deposit.

GALVESTON, Texas, feels proud over the completion of the "Texas Star Flour Mill," erected in that city by a stock company, of which Hon. John Rymershofer is President. It is the largest steam mill South of the Arkansas river, and it is fitted up throughout in modern style. It has both stones and rollers. The engine is of 60-horse power. The machinery was put in place by Messrs. Jno. T. Noye & Sons, Buffalo, N. Y. Having any quantity of excellent wheat in their immediate neighborhood, and a constant demand for flour from Mexican, West Indian and South American ports, the milling company feel confident of an excellent trade.

The New "Hundred Weight."

One of the most serious objections to an imperative adoption of the cental system has been that our foreign trade in grain has been carried on mainly with Great Britain, where the cental has never been in use. The British weights and measures pertaining to grain have always been more or less complex. Thus the English ton is 2,240 lbs. The transactions in grain are mainly by "quarters." The commercial "quarter" is 480 lbs, but the quarter of wheat is 504 lbs. The British quarter is a measure of capacity as much as is the bushel; it represents cubic space, and not weight. British wheat weighs from 63 to 64 lbs to the bushel, and eight bushels are equal to a "quarter." The ton being 2,240 lbs, the British "hundred weight" (cwt) is 112 lbs. The "stone" is equal to one-eighth of a hundred weight, and a "quarter" hundred is 28 lbs, or two stones weight. Another embarrassment is in the English mode of selling flour; the "barrel" of 196 lbs is unknown to British trade. Flour is sold by the "sack," 280 lbs and the sack is computed to weigh 6 lbs, making the weight of a British "sack" 286 lbs. American flour for exports is now put up in "sacks" instead of barrels; these are divided into parts of sacks, as halves, three-quarters, and other divisions, there being as many as five sizes put up in this country for the export trade. So many sacks represent so many hundreds of pounds, and as railroad and ocean freights are now charged by the hundred, the computation is an easy one. It has been found that sacks are more readily packed; they not occupying so much space in proportion to the weight of flour as the barrels, transportation of flour in that form is cheaper.

During 1878 the British Parliament adopted a new act relating to weights and measures, which act, among other things, provided that all grains and dry products should be sold by pound only, the pound avordupois being the unit. To the Board of Trade was left the determination of the multiples of the pound to be used in large transactions. The National Board of Trade recommended, and an Order in Council has adopted the "cental or new hundred weight" as a new denomination or standard. This order went into force in February. Hereafter, in all transactions in grain and dry products; the British hundred weight will be 100 lbs, instead of 112 as heretofore, and a ton of barley or potatoes will be 2,000 lbs, instead of 2,400 lbs.

There are those who can remember when in this country 112 lbs were the hundred weight, and when all the large scales in general use were supplied with weights of 7, 14, 28 and 56 lbs each. These divisions of the hundred weight are still in general use in England, but hereafter in grain and dry measure, the 100 lbs will have decimal divisions; fifty pounds will be half a hundred. The old system has not been abolished; the new one is not obligatory, but has been legalized; and the practice of using the cental, which has been so far confined to Liverpool, will probably become general.

The British hundred weight of 112 lbs being the sole standard in that country has heretofore been in the way of any general adoption in this country of the cental; but now that the hundred weight will have the same significance in both countries, there is no longer any substantial reason why it should not be adopted in this country, to the exclusion of the "bushel." All transactions of any magnitude should be rated by centals instead of by bushels. There is really no excuse in adhering to the old measure. A bushel of wheat is now by law 60 lbs, and a bushel of corn 56 lbs. Six hundred centals of wheat are equal to 1,000 bushels, and 560 centals of corn are equal to 1,000 bushels of corn. It will require but a very brief term to become as familiar with the measure by weight as with the measure of capacity, particularly as in all large transactions the grain is actually measured by weight and sold by weight. It will be as easy to reduce centals to bushels as it is now to reduce tons.

OATMEAL RELISH.—Fill a saucer nearly full of well-cooked oatmeal. Now fill the oatmeal full of strawberries (pressing them in), ripe peaches, ripe pears, or some such fruit. Add a little sugar and cream. It is a rich and delicate dish.

THE Argentine Republic, South America, is a good wheat-producing country. It is reported that 40 vessels are now on their way from the River Plata to European ports loaded with wheat. The emigration of Germans and Italians to the Argentine Republic is reported to be large.

THE PRODUCTION, EXPORT AND DOMESTIC CONSUMPTION OF WHEAT.—The following table, compiled by Tallmadge & Lindman, of Milwaukee, from official sources, is of value to all shippers of wheat:

Year.	Production.	Exports.	Home cons'n.
1863.....	173,077,900	41,468,400	132,609,500
1864.....	180,005,800	22,850,800	157,155,000
1865.....	148,552,800	16,494,800	132,058,000
1866.....	161,000,900	12,640,900	148,359,000
1867.....	212,441,400	26,323,000	186,118,400
1868.....	224,030,600	29,717,200	194,313,400
1869.....	260,146,900	53,900,700	206,246,200
1870.....	235,884,700	52,574,100	183,310,600
1871.....	230,722,400	38,986,700	191,735,700
1872.....	240,907,100	52,014,700	188,892,400
1873.....	281,354,700	91,310,400	189,744,300
1874.....	309,102,700	72,512,800	236,589,900
1875.....	292,135,000	74,750,000	217,385,000
1876.....	289,350,500	67,140,000	222,210,500
1877.....	394,104,100	92,141,000	272,023,500
1878.....	426,122,400	143,122,000	176,000,400
1879.....	480,000,000 estimated.		

Curiosities of Currency Redemption.

Whenever anybody mutilates a national bank or legal tender note, whenever anybody comes into possession of a worn-out note, or whenever by accident anybody's money of this character becomes so far destroyed that it will not pass, he sends it to the Treasurer's office, and there judgment is passed on it. Of course every precaution is had against fraud. Quite often a woe-begone piece of note will be sent in, and after the crucial test will turn out to be the relic of a counterfeit bill. Sometimes the affidavits accompanying a fragment of what was once a greenback are "manufactured." In such cases the replies that the sender gets to his request for redemption are more pointed than polite.

Among the curious cases which have come up, says the Washington Star, was that of the poor old woman in Philadelphia. She was saving money in order to accumulate enough to secure her admission to some charitable institution, and had got together \$65. Distrustful of savings banks, she put her money on a shelf well concealed. It soon disappeared. She was certain that it had been stolen. Some of the neighbors persuaded her to tear up the floor. She did so, and after a close search, the fragments of her \$65 were found in a rat's nest, the proprietors of which had been exercising their nibbling propensities on the money. She gathered up the fragments and sent them to the Treasury. Most of the money was in national bank notes, which were mutilated beyond the possibility of recognition. For them she could regain nothing. Of the legal tender notes but \$8 could be redeemed, so the old lady lost \$57 by the rats.

Another case in which there was a distrust of the banks was that of a farmer living in Illinois. He always kept his money in the house or about his person. A short time ago he had \$11,000 in ready cash and carried it in his coat pocket. He went to bed, leaving his coat on a chair. His wife complained of the coldness of the room, and he got up to stir the fire. He had been back in bed but a short time when the room filled with smoke and the well-known odor of "something burning." He jumped up to find his coat pocket burnt out and his \$11,000 a charred mass. Fortunately there was enough distinguishable about the notes to secure him, upon his sworn and attested affidavits of the facts, a new set complete. He may patronize the banks hereafter.

Perhaps one of the most remarkable cases that has ever come before the redemption division occurred last week. A Nebraska backwoodsman dropped his pocket-book containing \$100 into the camp-fire. Before he could get it out the heat had so acted upon it that the book had shrivelled up into a hard burnt ball. He did not attempt to open it, but sent it on with a statement of the facts. The ball was cracked just as a hickory nut would be in order to get at its contents. Inside was found, perfectly intact and undamaged, the \$20 and \$10 bills that went to make up the \$100.

The old boot figures quite frequently. A Tennessee man put \$135 into a boot and secreted his boot in his smoke-house. When he went back for it he lost his bearings and could not find it. Six months afterward he stumbled across the old boot exactly where he had left it. The money inside had furnished nourishment for cock-roaches and wood-lice. A handful of the small pieces was all that was left to tell the tale. Sending them on to the Treasury, they were examined, fixed together, and enough were identified to give the man \$60.

SERVED HIM RIGHT.—A gentleman in full dress—broadcloth coat, white gloves—bolted into a drug store precipitately recently.

"Can you fix me, right off," he panted, "a preparation of castor-oil that can be taken without any one ever detecting the odor, or even suspecting that it's medicine, and that will—you know, one that'll —"

"I should say I could," said the druggist.

In five minutes the apothecary came out with a glass of pleasant looking liquid in his hand.

"Monsieur," he said, with a smile, "while you are waiting, permit me to offer you a glass of lemonade."

"Certainly, but hurry, please."

The customer drank the beverage hastily. Several minutes passed, when he growled impatiently.

"Come, come, where is that preparation?"

"Monsieur," said the apothecary, "I am happy to observe that I have exactly met your desire. That preparation you have just taken, without the slightest suspicion of its character—"

"Beast, villain! Ah—hi! It wasn't for myself that I wanted it! I'm to be married in an hour, and it was for my prospective mother-in-law, who has just been taken ill."

Longevity of Millers.

During the thirty-four years and eight months, from May 1, 1843, to Dec. 31, 1877, there died in the State of Massachusetts 161,801 men over 20 years of age, whose occupation was specified in the registry of their decease. The average age at which they died was about 51 years. The number was so great and the period covered is so long that by the study of the classification of the employment of those dead, we can get a very good idea of the comparative ages at which men of different occupations and in an ordinarily healthy community are swept away by death. The deaths in only six different occupations were at an age on an average, above 60. They were, first the gentlemen, 68; second, the farmers, 65; third, the Judges, 64; fourth, the light-house keepers, nearly 63; fifth, the basket-makers, 61; and sixth, the pilots, over 60. Clergymen lived a little over 59 years and professors over 57 years, lawyers about 56 years and physicians 55 years. The active mechanics died on an average at the following ages: Millers, ropemakers and wheel-rights, 57 years; clothiers, pump and block makers and tallow chandlers, 56 years; potters, 55 years; hatters, 54 years; blacksmiths, 53 years; calico printers and wood turners, 52 years. All other occupations fell below the above enumerated classes, brakemen dying earliest of all at 26 years of age. It will thus be seen that millers are among the longest lived men in the community, following after professional men and gentlemen of leisure, who are the longest lived men in every country. The millers lived six years longer than the average, and twenty years longer than the class denominated as factors laboring abroad, (baggage-masters, brakemen, engineers, firemen, soldiers, etc.,) who died at an average age of about 37 years.

The French Milling Trade.

In order to obtain a correct idea of the immense value of the milling industry in France it will be found necessary to take the average consumption of flour in ordinary years, and add thereto the excess of the exports over the imports. Now, if we suppose each of the thirty-six millions of inhabitants in France to consume on an average 20.60 ounces of bread, which would be nearly equivalent to one pound of flour, we find that the total consumption of flour amounts to 35,275,000 pounds daily, or 12,875,375,000 pounds yearly. The average annual imports of flour from 1872 to 1876, were 29,207,000 pounds, and the average exports during the same period 275,790,000 pounds, and consequently the annual production of flour in France amounted to 13,121,958,000 pounds. Again, supposing every hundred pounds of wheat to yield on an average 74 pounds of flour, 22 pounds of bran and offal, and 4 pounds of dust, we arrive at the conclusion that the French mills daily grind about 825,000 bushels of grain into flour.

There are upwards of 15,000 pairs of stones in the different mills in the country, requiring sixty thousand horse power to drive them. If we further reckon the average price of wheat during the above-mentioned years to have been 54s. per quarter, the value of the annual production of flour will be about £92,000,000, and of bran and offal about £100,000. In the early part of the present century the mills were scattered over different parts of the country, the motive power employed being principally wind and water; but at the present moment there is no district where these small mills have not been replaced by larger ones, with at least six to ten pairs of stones, and driven by steam or hydraulic machinery, to avoid any stoppage of work on account of low water. Manual labor is employed as little as possible where the work can be performed by mechanical power. In a properly arranged mill one workman is sufficient for each two pairs, and one stone dresser for every five pairs of stones. In general the mills are fitted up for low grinding, and up to the present day only a few are engaged in medium grinding. The number employed in high grinding is also comparatively small. The milling trade of France, on the whole, is in a flourishing condition, and from the moderate demands of the consumers, with regard to the quality of the products, it is also very remunerative.

Marseilles is the great milling centre for the export trade, on account of its favorable position for receiving grain, and it is there that the large mills are situated which are principally engaged in the import and export trade. —Austro-Hungarian Miller.

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LUBRICANTS.—The evils attending the use of oils and fats as lubricants upon machinery are well known to engineers and mechanics, but the causes and nature of their injurious action are not so generally understood. We give, therefore, a brief but very lucid explanation of their action which we find credited to Dr. Marquardt, by our contemporary, the *Boston Journal of Chemistry*. The most obvious and least objectionable evil attending their use is the gradual oxidation (or gumming) which they undergo, and in consequence of which their lubricating qualities rapidly diminish. A more objectionable property of these substances shows itself when they are applied to such parts of machinery as are more or less highly heated. In such circumstances, these substances are decomposed into their constituents, glycerine and fatty acids. The latter combine with the iron work of machinery to form an iron soap, the metal surfaces being corroded thereby and fresh surfaces exposed to corrosion. Marquardt recommends the substitution of the mineral oils (heavy petroleum products that boil above 600 deg. F.) for animal oils and fats as the remedy.

Foreign Flour Competition.

A correspondent "Nil Desperandum," supports the views we expressed in last issue with regard to the mode in which the British miller should meet his foreign competitor, and he also gives a few crumbs of comfort to the former which may enable him to bear his present ills with some equanimity of spirit. In the first place our correspondent, a gentleman who is thoroughly competent to pronounce an opinion on the subject, says the American manufacturer has yet to learn that the London bakers expect above all things uniformity in the quality of the flour they use. For some months after the supply of American flour set in with the severity that has characterized it for some considerable time past, several well-known brands sustained an excellent character. The quality of these, however, has since been so much reduced that they are not worth what they were by 3s. per 280 pounds. This, as might be expected, has led buyers to purchase with extreme caution, and, although great care in testing samples is used, the final and best test, that of actual bread-making, frequently discloses the fact that the flour which by sample test appeared the best by 2s. per 280 pounds, was 8s. worse than that which, by the same test, was placed in the second place as regards value, but which, by the actual baking test, was placed first. The London baker is more a man of routine than of science, and if he gets a cheap lot of flour that has a decent appearance, he is tempted to take it for mixing purposes, and only finds out his mistake when he finds his customers joining in a chorus of complaint with regard to degeneracy in the quality of his bread. We have heard of many complaints about the deterioration of the color of his bread made from home manufactured flour, mixed with the lower brands of American, which have recently so freely appeared upon our markets, while many bakers who have been beguiled into using them, in consequence of the low figure at which they can be bought, declare that they are dear at any price. All this, of course, is in favor of the native miller. It indicates that the foreigner cannot compete with him with the weapon of low grade flour, and the highest grade is too expensive a weapon to be profitably used. It must, however, be borne in mind that in America milling is a progressive calling, and that there science is becoming more and more a factor in flour manufacture, by means of which the American may, within a short time, turn in his own favor the balance of advantage which, as matters now stand, is on the side of the manufacturers of this country. The ultimate safety of the latter, in other words, the securing of a position from which he cannot be driven, depends upon his readiness to press science into his service, for the purpose of raising the standard of quality in his flour as regards strength, color, elasticity and durability, to such an altitude as will fairly satisfy the growing demand to this country for a superior class of household bread than that to which we have been previously accustomed. —*The Miller, London.*

OTTAWA dispatches state that the Canadian Government has discovered that, in order to evade the duty on flour, American shippers have placed a Canadian brand upon American flour. The customs department at Halifax has been instructed to require Canadian customs certificate for all flour said to be Canadian, imported via the United States. —*N. E. Grocer.*

Monopoly in Milling.

The histories of all manufacturing industries are replete with instances of efforts to establish monopolies. The flouring industry from its nature has been perhaps as free from these efforts as any other, but there appears to be at the present time a growing tendency to concentrate the manufacture of flour in certain milling centres in large mills. It is claimed, and more than likely it is true, that a very large mill can turn out great quantities of the best flour at less expense per barrel than smaller institutions, the owners of many of these latter not being financially able to avail themselves of the best modern milling machinery. Recently we heard a well-known miller state that it was only a question of time, and no very long time, either, when most of the small country merchant mills would shut down for good and the milling of America would be almost entirely done by great mills in milling centres such as St. Louis, Milwaukee, and Minneapolis. Such a result is, we think, neither probable or desirable. The thousands of water-powers throughout the country can be utilized in no better manner than to drive mills to make the grain into flour in the vicinity of the place where it is grown. There should be established grades of flour as there is of wheat; and mills, whether great or small, in the city or in the country, should grind to come up to these established grades. It is true that certain places, among which Milwaukee is one of the most prominent from natural and artificial advantages, are and always will be great milling centres; but there is no reason that we know of why flour made in outside merchant mills, where power is cheap and transportation reasonable in price, should not be able to hold its place in the markets against flour made in the "big mills," if it is equal in quality. Judging by the reports from the various mill-building establishments furnished from month to month, we venture the assertion that there will be more small mills built during the year 1879 than in any previous year. Our population is augmenting, our wheat production is increasing, our flour export trade is rapidly growing, and we believe there is room for all the flour mills we now have and thousands more.

SOME tricks in "Pailor Magic," printed in juvenile publications, are very amusing as well as very simple. "The Enchanted Pin," for instance. To perform this trick you take a common brass pin, such as a man sometimes uses to fasten his shirt collar when a rear button flies off. To satisfy your audience that the pin doesn't contain a false bottom, let them have it in their hands to inspect. This will convince them that there is no deception about it. Now bend the pin in two places—first, about one-third from the head, and, second, the same distance from the point, so that the business end will project upward. Again show your pin to the audience in order to satisfy them that it is the same pin, only bent—bent on mischief. Now place the pin on a hard-bottomed chair, and when a late visitor enters invite him to sit upon the chair. The effect will be magical. If the ceiling is not more than ten feet from the floor, the probabilities are that the man will arise so spontaneously that his head will make a dent in it. This innocent little trick never fails to amuse an audience, and if such amusement received more encouragement in the domestic circle there would be few poems written asking "Where is my boy to-night?" —*Norristown Herald.*

THE shortest organized railroad in the world, says the *Railway Age*, is the Castle Rock & Tucker Gulch railroad in Colorado, which boasts of a President and General Manager, and is just 700 feet long. A paragraph has been going the rounds of the newspapers that the Wood River railroad, in Rhode Island, is the shortest in the world, its length being seven miles. The first sentence in this paragraph ought to settle the Wood River statement. In fact, there are several shorter railroads than the Wood River. For instance, the Horn Pond branch, Mass., two-thirds of a mile; the Moshassuch Valley, Rhode Island, less than two miles; the Ferro Monte, N. J., 2½ miles; the Mt. Hope 4½, and the Charlotteburg & Green Lake 4½ miles. The last two are New Jersey roads.

A DARKEY was boasting to a grocer of the cheapness of ten pounds of sugar he had purchased at a rival store. "Let me weigh it," said the grocer. The darkey assented, and it was found two pounds short. The colored gentleman looked perplexed for a moment, and said, "Guess he didn't cheat dis chile much, cos while he was gettin' the sugar I stole two pair ob shoes."

Recent Patents.

The following patents for flour milling machinery were issued from the United States Patent Office, April 29th, 1879, to the parties named below:

Fanning-mill.—John Bennett, Belleville, Ontario, Canada.

Diamond Mill-stone Dressing Machine.—Thomas P. Benton, La Crosse, Wis.

Turbine Water Wheel.—John C. Cline, Philadelphia, Pa.

Mill-stone Dressing Machine.—John C. Cookson and S. L. Hart, Menasha, Wis.

Grinding Mill.—John Fitzgerald, Brooklyn, N. Y.

Turbine Water Wheel.—Samuel Goutner, York, Pa.

Grain Meter.—Edward Riessert, Cologne, Prussia.

Middlings Purifier.—William S. Snyder, Aurora, Ind.

The following milling patents were issued May 6th, 1879:

Bag-faster.—Jacob J. Boyer, Hebron, Neb.

Grain Drying Kiln.—Charles W. Boynton, Chicago, Ill.

Machinery for Unloading Grain from Cars.—Thaddeus L. Clark, Mt. Vernon, Ohio.

Middlings Grinding Mill.—James Jones, Louisville, Ky.

Grain Separator.—John H. Sturgeon, Owensville, Ind.

The following patents were issued May 13th, 1879:

Water Wheel Curb.—Wm. R. Calkins, Great Barrington, Mass.

Fanning-mill.—A. W. and C. T. Kendrick, Brooklyn, N. Y.

Grain Sampler.—Wilfred C. Lyman, Chicago, Ill.

Grain Sacking Scales.—Edwin A. Martin, Thornsburg, Ohio.

Middlings Grinding Mill.—Jonathan Mills, Milwaukee, Wis.

Grinding Mill.—Ambrose W. Straub, Philadelphia, Pa.

The following patents were issued May 20th, 1879:

Bag-holder.—Charles A. Bickle, Hagerstown, Md.

Grinding Mill.—John T. Obenchain, Logansport, Ind.

Mill-stone Driver.—William Patterson, Constantine, Mich.

Middlings Separator.—Wm. and N. Thayer, Westerville, Ohio.

The following patents were issued May 27th, 1879:

Bran Package.—J. and E. Belt, St. Paul, Minn.

Process and Apparatus for Mashing Grain.—John A. Ebenhardt, Cincinnati, Ohio.

Bag-faster.—Alexander Gleason, Greenville, Mich.

Grain Steamer and Drier.—Lafayette Hartson, Wyoming, Iowa.

Grain Transfer Machine.—John T. Hugh, Pittsburg, Pa.

Grain Conducting Apparatus.—John T. Lenox, Chicago, Ill.

The following patents were issued June 3d, 1879:

Grain Separator.—James W. Morrison, Clinton, Ill.

Grain Sower and Cleaner.—Morton Toulmeir, Mobile, Ala.

Middlings Purifier.—Henry White, Galveston, Texas.

The following patents were issued June 10th, 1879:

Magnetic Separator.—Henry E. Cook and J. B. Thayer, River Falls, Wis.

Water Wheel.—Albert B. Conch, Newman, Ga.

Ventilation for Mills.—Venendo P. Harris, Greensburg, Ind.

Grain Cleaner.—Josce Johnson, New Lebanon, N. Y.

Middlings Separator.—Chauncy T. Keller, Lima, Ohio.

The following patents were issued June 17th, 1879:

Porcelain Rolls for Grain Crushing Machines.—Wilhelm Braum, Carlsbad, Austria, assignor to Weber, Uster, Switzerland.

Dressing Mill-stones.—Daniel Brubaker, Oswego, N. Y.

Portable Roof for Sheltering Grain.—John R. Davis, Sun Prairie, Wis.

Feed Roll for Middlings flour.—Charles A. W. Jaquett, Brooklyn, N. Y.

Grain Door.—Thos. Sille, Ft. Erie, Canada, and J. R. Petne, Buffalo, N. Y.

Mill-stone Driver.—Geo. T. Smith and W. F. Cochrane, Jackson, Mich.

Rice Hulling Machine.—Edsall Totman, Batavia, Ill.

The following patents were issued June 24th, 1879:

Mill-stone Driver.—Wm. J. Blackwell, Magnesianborough, W. Va.

Grain Separator.—Union Iron Works, Decatur, Ill.

Blow-regulator for Grain Separator.—Chas. H. Faling, Tonawanda, N. Y.

Grain Disintegrator.—Edward Fox, Brooklyn, N. Y.

Turbine Water Wheel.—Francis M. Kent, Grand Lodge, Mich.

Mathew Greggson, of Ramsey, Minn., had part of his milldam washed out by high water on the 1st of June, and, before repairing the dam, will build two additions to the mill and put in more machinery.

[Written for the United States Miller by James McLean, of Glasgow, Scotland.]

Does the Modern System of Milling Pay?

A SUBJECT THAT WILL BEAR CONSIDERABLE DISCUSSION.

The connection between the proportions of face and furrow surface and the production of more or less middlings, with their influence on the quality of the flour, originates a vast amount of quackery in millerdom (and it must be admitted some of those quacks can make fortunes as well as the medical ones), and it certainly is amusing to see the precision with which they talk of the percentages of middlings with certain styles of stone dressing, and the amount of feed to carry. One leading maxim with them is that the miller who can produce the greatest amount of evenly-granulated middlings is the most proficient. This is the rock on which many New Process millers must founder. If experienced, practical millers reflect on their own experience in grinding down at once, they would see that it is an utter impossibility to obtain a heavy proportion of evenly-granulated middlings without friction more or less according to the keenness of the stone, and this friction causes pulverized bran and a heavy proportion of flour dust,—the more cutting power the more regular, and the more crushing power the more irregular in size the middlings.

For example, a stone is newly furrowed and cracked and makes numerous middlings and cut-up bran in spite of the miller, and except he can remedy this by an extra feed and consequently heat on the stone, he gets specky flour, which can only be avoided by extra sifting or dressing, or smaller flour produce. If he is willing to be at the expense of extra sifting and the wheat is soft, the flour works better with the baker, being freer or sharper; but if the wheat is hard a double injury is inflicted; the bran being more cut up, causes extra expense for dressing, and at the same time the flour is over free or gritty, causing short, badly-raised bread.

Now, the same law which prevails with grinding down at once, likewise prevails however high or often the grindings are, and it certainly seems extraordinary reasoning on the part of those who advocate a smaller feed for high grinding, and shows that the prevalent idea has been to try and skin the kernel, whereas if they had inquired as to the results of experiments made long since, they would have seen such a mode of disintegration never paid.

A stone's furrows edges at the rim catches the stuff exactly similar to rollers (as it is utter nonsense that they cut it like shears), and gives the miller a wonderful command of crushing and cutting power. The less the crushing power is exercised, the more the bran is pulverized from the rotary motion of the particles being more developed; and with hard wheat which requires no artificial stone edges or cracking, even the smoothest grinding surface with a moderate keen stone cannot prevent great pulverization of the bran however high the grinding if the crushing power is not duly exercised by putting on more feed according to the hardness of the wheat.

The smooth grinding surface, or slow stone speed, or roller grinding, are but appliances to attain the requisite crushing power so as to avoid excessive heat; and as the higher the grinding, the more the particles will burst and expand without injury from compression, therefore the more the crushing power can be exercised by an increased feed, and at the end the results will be whiter flour and more of it with an equal expense for sifting, compared to that where the crushing power has not been duly exercised; and the more the crushing power is exercised and the less the face friction, the more irregular in size the flour particles. And even-granulated middlings should never be attempted with hard wheat until the final bran-cleaning grinding, when the stones are close enough to make the bran slide without rolling, cleaning it better and quicker, and the extra friction makes more even-sized middlings. As even granulation must always have increased face friction or cutting power, which is adding to the difficulty of separation by sifting, as well as augmenting the quantity of flour dust; and, to avoid this flour dust, friction should be exercised no more than what is requisite for clean bran without regard to the evenness of granulation, as very hard wheat splinters through from bran to bran, and a large proportion of clean bran can be separated while the flour particles are still of a large size, the proportion of clean bran decreasing as the wheat gets softer or more compressible.

Subscribe for the U. S. MILLER; \$1 per year.

A Fall River, Mass., mechanic recently said that during his lifetime he had been in twenty-six different strikes, and had lost money every time by being connected with them.

Farina.

The word "farina" is of Latin origin, and comes from *far*, meaning a kind of grain—"spelt," known as German wheat, which was formerly used by the Romans either roasted whole or ground into flour. Hence the name was originally applied to the *matter*: but as this matter was also ground into flour the name came to be applied to the flour likewise, and by degrees, to the ground product of cereals. "Farina" is at present the French name for flour, and we may quote the word "flour" as very similar in use to "farina." "Flour" means the matter, as when we speak of "flour" without any prefix or qualification, it is understood to mean wheat flour, but flour also applies to the *form*, and is used in a secondary sense to mean anything ground into powder. Dr. Ure defines "farina" as "the flour of any species of corn or starchy root, such as the potato, etc." The chemical definition of "farina" is "starch" "fecula." The name "farina" is given in this country to the hard flint and most valuable part of wheat. It is made by a process of high grinding, which secures granulation, the wheat from which it is made being previously cleaned and scoured. Spring wheat being the hardest, yields more farina than does winter wheat, but both are used in its manufacture. From farina is manufactured what are termed "new process" flours. It is put up in bulk and in packages for domestic use.

A Card From Geo. T. Smith.

BLOOMINGTON, Ill., June 14, 1879. *Editor United States Miller.*—DEAR SIR: In your issue for June there appeared "A Card" from Messrs. Notbohm Bros., of Milwaukee, which merits at my hand a grateful acknowledgement. The magnanimity of the writers is most marked, and all the more appreciated by me, because the article referred to was wholly unsought and unexpected. It is cheering in these days of sharp competition and rivalry in all matters pertaining to business—especially improvements in machinery—to find such evidences of pure manhood, and if other manufacturers of purifiers had been as free to acknowledge the rights of patentees as the above named firm, millers would have been saved much valuable time and annoyance and a large amount of uselessly expended money. Messrs. Notbohm Bros. took a position in the early introduction of my middling purifiers, which resulted in their temporary prejudice, but by their thoughtful consideration, together with their business sagacity, discovered their error, and had the honesty to so place themselves before your readers. These gentlemen have expressed themselves very satisfactorily in your paper, and I am pleased to make an extract from their article. They say: "The compromise made at Chicago by the Association which recognized Smith's patent, was, therefore, as will readily be seen, of the utmost importance to us, and we congratulate the Association and the Smith's Purifier Co. for it, believing that our aid in that direction will be appreciated by both."

I cannot help tendering my thanks for the kind manner in which they express themselves, and feel that such competitors are worthy.

Yours, Respectfully,
GEORGE T. SMITH.

THE *Appleton Post*, in speaking of the new flour mill to be erected by M. T. Bolt, of Michigan, in Appleton, describes the new mill as follows:

The dimensions of the building are to be 40x60 feet and four stories in height including foundation. The foundation is to be composed of solid stone masonry. The superstructure is to be a heavy frame, veneered with brick. The whole to be covered with substantial iron roof and thus the establishment will be practically fire proof, so far as exposure from the outside is concerned.

The power is to be furnished by two excellent turbine water wheels, which are to be placed in iron husks. The machinery will further consist of five run of stone, three purifiers and one set of crushers, at present. Additional crushers will be added as occasion demands. The machinery is to be furnished and placed by Hurlbert & Paige, of Painesville, Ohio. This mill will be completed and ready for operation as soon as the growing crop is harvested.

Nordyke & Marmon Co., of Indianapolis, Ind., are making almost a new mill from the remains of Henry Kleischer's old one, situated at Frankfort, Ind. Purifiers, middlings, burrs and other machinery is being added.

[Official Publication.]

Important Address of the Millers National Association,

TO THE MERCHANT MILLERS OF THE UNITED STATES.

SECRETARY'S OFFICE, MILWAUKEE, June 16th, 1879.

DEAR SIR: The Millers National Association has become a living reality, and is destined to be one of the leading organizations in the United States, both for the protection and advantages accruing to its membership and the upbuilding and improvement of this, the largest manufacturing interest in the nation. Thus far its history has been largely that of a defensive organization. Although its first conception was purely for the information and improvement of its members, this seems to have been temporarily placed largely in the background when the millers of the United States found themselves face to face with demands for royalty amounting to millions of dollars on a reissued patent which they fully believed to be illegal and fraudulent. As an illustration of what the Association has already accomplished in the way of protecting its members we need but enumerate some of the more prominent claims that have been successfully met since its organization, among which are the Cochrane, which taken at its most modest demands before suits were commenced, @ \$2,000 per run; the Geo. T. Smith, \$250; Booth Separator, \$25; Denchfield, still in the field and now being contested, \$100; making a total of \$2,375 per run, to say nothing of the Barter, Stoll and Guilder patents, now happily disposed of as far as our members are concerned by the settlement at Chicago. The first of these with its exorbitant demands has, we trust, been buried out of sight and past resurrection.

The second of these, the Geo. T. Smith patents on the combination of air blast or suction vibrating sieve and brush, is now owned by the Consolidated Middlings Purifier Company, who also own the Stoll reissue, covering a reciprocating sieve with sections of different degrees of fineness; a fan for causing air currents to pass upward through the sieve and material on the sieve, openings for regulating air currents, etc., etc. The Barter intending to cover the vibrating sieve brush etc., providing the Smith should fail, and the Guilder patents covering the transverse brush.

With this array of patents owned by men of undoubted energy and with abundant capital, the officers of the Association have with good reasons anticipated a series of vexations and expensive law-suits, perhaps extending over a number of years before the justice or fraudulency of these various claims could be settled by the courts, and in which as in the Cochrane case the members of the Association could be at all the trouble and expense, and outsiders who are either too niggardly or negligent to lend a helping hand, enjoy equal benefits. Happily, however, through the judicious labors of our Executive Committee, the tables have turned, and those remaining outside the Association must fight their battles for themselves. After a most thorough and exhaustive examination of the whole subject, aided by the Association's attorney, Judge Harding, of Philadelphia, a gentleman of eminent ability and acknowledged authority on patent law, who has made middlings purification a special study, as illustrated in his signal defeat of the Cochrane ring, they have made an arrangement whereby the members of the Association, AND ALL WHO MAY BECOME SUCH PRIOR TO JULY 15th, 1879, can obtain a complete release for all past infringement and a license for the future use of purifiers now owned by them by the payment of a mere nominal sum for those machines only containing the full combination of blast (or suction) vibrating sieve and brush under the sieve. This payment by members of the Association will cover all patents on purifiers belonging to this company, including the Stoll, Barter and Smith. Members desiring to put brush on purifiers now in their mill can do so at same rates; they also have special rates of discount on future purchases of machines from this company.

The Denchfield suction claims for which a royalty is still asked (though the patent has already expired) exceeding the whole amount expended in defeating the Cochrane suits, and to be paid by members of this Association for a complete release under the Barter, Smith and Stoll patents, is now being contested by the Association, as will the Barker if thrust upon them.

The Executive Committee have also made an arrangement limiting the liability of members under the Downton roller patent providing it is sustained by the United States Court.

By this action of the Executive Committee the Association may expect in future to be

comparatively free from expensive litigation, reducing the cost after the expenses already incurred are met to a trifling amount annually, while freed from this source of annoyance it can return to the first and grand object of its organization, the information and advancement of its members, and the development of the milling industry until we shall be enabled to profitably grind the millions of bushels of wheat now annually exported, and ship the manufactured product to feed the hungry in all parts of the world.

Considering what the Association has already accomplished and its capabilities for benefitting its members in future, we believe this a fitting time to call upon the millers of the United States to join with us. It is no longer an experiment, but a grand success, but to enjoy its full benefits you must come at once. The advantages secured under the compromise made by the Executive Committee are limited to those who become members prior to July 15th, 1879. After that time you must expect to meet the Consolidated Middlings Purifier Company on their own ground and pay whatever they may demand, as you cannot expect to contest their claims single handed. As an illustration of that fact, I may say that it cost the National Association nearly \$80,000 to defend the Cochrane suits.

In addition to the advantages above mentioned, members will be protected against all future fraudulent or invalid patents which may be owned by unscrupulous men or combinations, whose sole aim is to bleed or levy blackmail on the miller. They will have the benefit of all information now or hereafter in the possession of the National Association, and the large discounts which will be obtained by the officers of the National Association for their members from patentees and manufacturers of mill machinery. The number of patents issued within the last seven or eight years on middlings purifiers amount to several hundred.

If you wish to join with us you will apply at once to the Secretary of your State Association, who, on payment of assessment already paid by the old members, will send you the full details of the Chicago compromise and a certificate of membership entitling you to all benefits accruing to members. It is very desirable that every merchant miller in the United States should be enrolled as a member—"IN UNION THERE IS STRENGTH." Where no State organization exists, you can apply directly to the Secretary of the National Association who will forward the necessary papers. Let us hear from you at once, there is no time to be lost. Respectfully,

S. H. SEAMANS, Sec'y and Treas.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

The Brewers' Bother.

It has been said that "misery loves company," and if such is the case, the millers have the consolation that they are not alone in trouble over patent right suits. The brewers have been sued for infringement of a patent owned by Mathew Gottfried and others; suits having been brought in the U. S. Circuit Court for the District of Wisconsin, against the Ph. Best Brewing Company, Joseph Schlitz, Valentine Blatz and Jacob Obermann of Milwaukee, and Bartholomew & Roessing, Fortune Bros., and Perter Schoenhafen of Chicago. The suit is brought on the ground of an alleged infringement of a patent issued May 3d, 1864, to Matthew Gottfried and John F. T. Holbeck, for an improved invention in pitching beer barrels. The patented invention consists in the application of a hot blast into the interior of the barrels for the purpose of heating the staves so that the pitch will stick to the wood and form a coating. Prior to the patent the process required the removal of the heads of the barrels. The invention is in use by the brewers throughout the country, and the present cases serve as tests for hundreds of others, some of which are now pending and others that will be instituted should the plaintiffs be successful. The invention is said to be the most important ever made in the brewing business, and upon the litigation depend hundreds of thousands of dollars. The cases from Chicago were decided in favor of the patentees by Judge Blodgett a year ago, but a rehearing was subsequently granted. No compromise was effected at the June convention of the brewers in St. Louis. It is proposed to fight it out.

Russian Cereals.

[Translated from L'Echo Agricole for the London Miller, and republished especially for the benefit of the readers of the United States Miller].

In the grand international market of Europe, Russia figures as the country *par excellence* for the production of cereals. According to the statistical accounts of late years, Russia produces on an average 686,700,000 hectolitres (1,888,425,000 imp. bus.) of grain annually, 633,000 hectolitres (1,74,750 imp. bus.) of which are produced by European Russia (comprising the kingdom of Poland, the produce of which amounts to 42,000,000 hectolitres—87,150,000 imp. bus.); 8,400,000 hectolitres (23,100,000 imp. bus.) are produced by the Grand Duchy of Finland, 21,000,000 hectolitres (57,750,000 imp. bus.) by the Caucasus, and lastly, 27,300,000 hectolitres (75,075,000 imp. bus.) by Siberia and Turkestan.

Of the total quantity of grain produced by European Russia, 92.3 per cent, or 581,500,000 hectolitres (87,150,000 imp. bus.) remain in the country and serve not only for home consumption, but for sowing; the remaining 7.10 per cent, or 48,000,000 hectolitres (132,000,000 imp. bus.), are exported both by sea and land, and go to stock the different markets of Western Europe.*

The predominant part played by Russia on the international market of Europe as a corn-producing country, is proved by the comparative report of the quantities of cereals imported and exported by the various countries of Europe during late years, of which we give the resume in the following table.

Let 100 represent the total quantity of cereals, grain, flour, etc., figuring in the various markets of Europe, both for export and import, we find the part of each country in this international traffic represented by the following figures:

IMPORTING COUNTRIES.	
England.....	70.75 per cent.
Belgium.....	6.13 "
Holland.....	5.66 "
Sweden and Norway.....	4.25 "
Germany.....	3.96 "
Switzerland.....	3.78 "
France.....	2.83 "
Italy.....	2.17 "
Greece.....	0.47 "
Total.....	100
EXPORTING COUNTRIES.	
Russia.....	37.62 per cent.
North America.....	25.47 "
Danubian Principalities.....	14.15 "
Austria-Hungary.....	11.32 "
Denmark.....	4.72 "
Other countries of Europe (Turkey, Spain, Portugal, Africa, America, Australia).....	6.72 "
Total.....	100

England, the grain importing country *par excellence*, is also the principal buyer and consumer of the cereals produced by Russia. The greatest part of the cereals exported from Russia as well from the Baltic ports as by way of the Black Sea and the Sea of Azoff, and even by land, is intended for Great Britain.

France and Italy take the corn exported through the Southern ports. Germany provides herself from Russia, both by land and through the Baltic ports. However, part of the Russian grain sent to Germany only passes in transit through the Prussian railways, to be sent to England from Prussian ports. As regards the other countries above mentioned, they only receive Russian cereals indirectly and by accident; the commercial relations of these several countries with Russia are altogether insignificant, with exception of those of Holland and Greece, which sometimes take important quantities.

Besides exportation, comprising nearly three-sevenths of the corn circulating in the different Russian markets, there exists in Russia a great home movement, the object of which is to provision by means of the remaining four-sevenths, the other parts of European Russia less favored with respect to production, and unable to provide for themselves. As regards production compared with population, Russia must be divided into three large zones, one of which—the northern and a portion of the central zone—produces less corn than suffices for local consumption; the second, that of the West, and part of the East, produces no more than sufficient to enable it to dispense with foreign aid; and lastly, the third, the great zone of the celebrated black land, or *tochernozeme*, the zone which embraces twenty-six Governments, as well in the centre as in the South, in the South-east as in the South-west (the kingdom of Poland, though also deprived of its black land, must also be comprised in this third region), and where the production suffices not only for local consumption, but also feeds the first of the above-mentioned regions, and by itself alone, furnishes to commerce and for exportation all that is not required for Russian home consumption, an amount the importance of which we have indicated above. It is then to this

part of Russia alone, exceptionally favored in respect to soil and climate that we are indebted for the large mass of cereals of all kinds which supply our internal markets and provide for exportation.

The total area of European Russia, including the Kingdom of Poland, is estimated at five million square kilometres, or 500,000 hectares (1,236,000 acres).

This vast extent of territory contained, in 1875, a population of 71,736,980, which is not more than 14.3 per square kilometre. (A kilometre is 4 poles 38 inches.) Although these figures represent an arithmetical average, they are not to be regarded as absolutely correct, inasmuch as the density of population varies enormously in the different regions and provinces of Russia. In certain provinces of the centre and south-west, the population amounts to 45.50 inhabitants per kilometre, whilst in the regions of the north and east there are less than 5.1 of inhabitants per kilometre. Still, keeping in view the three principal zones mentioned above, we find in respect to the first that in a compass of 1,957,317 kilometres, with 15,404,052 inhabitants (8 per square kilometre), there is an average production of 76,656,000 hectolitres (210,804,000 imp. bus.), which is equivalent to 4.97 hectolitres for every inhabitant.

As regards the northern and eastern zones of the Russian Empire, which we have represented as being able almost to provide for themselves, in a compass of 791,718 kilometres,* containing 10,807,382 inhabitants (14 inhabitants per square kilo.), the production amounts to 85,050,000 hectolitres, which is equivalent to 7.85 hectolitres of production and consumption for each inhabitant; and lastly, the third, the great productive zone of Russia, where, in a compass of 2,250,964 kilometres, and with a population of 45,429,546 (20 per sq. kilo.), we find an average production of 468,300,000 hectolitres,† or 10.80 hectolitres per inhabitant. In the first zone, then, there is a deficit of nearly 3 hectolitres, and in the third, an excess of 2 hectolitres inhabitant. For the whole of Russia the average production of grain amounts to 8.78 hectolitres; the internal consumption, both in providing for the wants of the inhabitants and for sowing the lands, amounts to 8.11 hectolitres per inhabitant; the remaining 67 litres (the excess of production over local requirements) are reported.

Properly speaking, the agricultural portion of the territory of European Russia (comprising the Kingdom of Poland, but exclusive of the Grand Duchy of Finland) may be estimated at 163,800,000 hectares,‡ which corresponds to 84.07 per cent of the total area of the land, which we shall estimate here, after deducting the area of the waters, at 780,800,000 hectares. The 36.87 per cent of this quantity, 12.39 per cent of the total area (or 60,080,000 hectares), represents the part of the prairies or meadow lands, the productive steppes and pastures; 103,740,000 hectares—21.58 per cent of the whole land, 63.33 per cent of the agricultural part—fall to the arable land. Let us say at once that the relation which the arable land bears to the prairies and pastures is subject to exceedingly considerable variations, in the same way as is the agricultural part of the territory in relation to the land not under cultivation and the woody parts. Thus, whereas in certain provinces of the centre, at the northern part of the region of the black land, the quantity of arable land amounts to more than half—hay, even to two-thirds of the total area, reserving for the meadow lands only 10 per cent, and for the woods 9 per cent; in the north and north-east of Russia this quantity is very small in comparison with the area of the woods and the undefined lands. It is the same in the south compared to the large extent of the steppes and fertile meadows, which are only employed for cultivation on a relatively small scale, and where agriculture makes no use of the manure which the mass of fodder obtained in this country could produce, if the breeding of cattle here did not possess an absolutely primitive character.

Considered under the point of view of cultivation, the arable lands in Russia should be divided into three categories—fallow land, land used for its production of cereals, and land producing oleaginous and leguminous plants, root plants, fodder, special products, etc. Considering the predominance in nearly every part of Russia, except the Southern region, the kingdom of Poland, and the Baltic provinces, of the triennial rotation of crops, the extent of the fallow land is very considerable. The extent of the land devoted to agricultural plants, other than cereals, considering that it cannot be fixed at more than

4,868,000 hectares, which corresponds to 421 per cent of the quantity of arable land, to express the extent of the land devoted to the cultivation of cereals (inclusive of peas, which statistical accounts do not admit of our separating from cereals), we have the statement of 66,520,000 hectares, an area presenting the 63.16 per cent of arable land, 40 per cent of agricultural area, and 13.62 per cent of the total soil of Russia.

Cereals in their turn being divided into winter and summer cereals, we ought to make a distinction between the quantity of land employed in the cultivation of those different kinds, and we find 31,236,000 hectares or 30.15 per cent of arable land annually devoted to the cultivation of winter cereals, and 34,284,000 hectares or 33 per cent of arable land used for summer cereals. If to the quantity of land under cultivation of summer cereals we add the land sown with plants other than cereals, and which for the greater part are not winter plants, we find not less than 37.2 per cent of arable land employed in the cultivation of summer plants, consequently there is not only a larger area devoted to winter cultivation, but also of fallow land.

This absolute and relative predominance of summer cultivation is explained by the fact that in the South of Russia, in the region of the steppes, winter plants are scarcely ever cultivated, and the mode of cultivation prevalent there excludes even the fallow, the uncultivated steppes producing generally, during the years when they are cultivated, only summer plants, such as wheat, flax, millet, etc., and remaining during the rest of the time in the category of undefined lands, pastures and meadows. Summer plants have the advantage over winter plants in Poland also. As a general rule it may be admitted that the production of winter wheat corn increases in proportion as we advance from North-east to South-east, giving place to summer plants in a direction nearly parallel to that of the isothermal lines, or lines of equal temperature. Amongst the cereals cultivated in Russia, rye holds the first place, in consequence of the extent of the land it occupies. It occupies not less than 42.97 per cent of the land devoted to the cultivation of cereals; rye alone takes in nearly the whole of the fields reserved for winter plants, for the area devoted to the cultivation of winter corn is relatively very restricted, the latter occupying no more than 4.78 per cent of the land devoted to cereals. Amongst summer cereals, oats holds the first place; they occupy not less than 21.11 per cent, wheat, 7 per cent, millet, maize, etc., which takes up the rest of the land, or 1.8 per cent.

Such is the relative importance of the cultivation of the various kinds of cereals in Russia according to the extent of the land devoted to each of these plants. They may be classed in a rather different order, if we take into account the relative importance of the product of these various cultivations in the Russian home and foreign trade. From the latter point of view, it is no longer rye which holds the first place, but wheat. For this reason we proceed to a more special examination of the various cereals cultivated in Russia.

WHEAT.

Notwithstanding the importance in the agricultural produce of Russia, wheat is a plant the cultivation of which is far from being general there. Although the limit of wheat extends from North-east to North-west, to the 59th, 61st, and 62nd degrees, and in Finland even to the 63rd degree of latitude, the cultivation of this cereal is unimportant, except in the regions of the South, South-east, and South-west, and partly in the centre of Russia. This forms the real wheat region, approaching to its northern part, which nearly corresponds with the northern limit of the region of the black land, the grand region of the predominant cultivation of rye, a region which, with few exceptions, embraces all the northern part, as well as the North-east, Northwest, and centre of Russia, destitute of black land.

According to the cultivation of summer wheat predominates over that of winter wheat, the dominant region of the cultivation in Russia ought to be divided into two distinct and separate parts. The cultivation of winter wheat predominates in the northern part of this region, as also to the West of Russia and in Poland. The cultivation of summer wheat is restricted to the Southern part and all the region of the South-east of Russia. In all the other parts of the empire which do not enter within the circumference of the wheat zone, the cultivation of this plant possesses only secondary importance, appearing only

sporadically, with exception of a few localities in the North-west, the Baltic provinces, etc. Summer wheat is cultivated by preference in these localities. The cultivation of summer wheat predominating throughout the vast regions of the South, it is the latter variety of the two sorts of wheat which possesses the greatest importance in Russia, as much by the extent of territory devoted to it as by the mass of products which it furnishes for consumption. Thus, of the 11,575,000 hectares annually occupied in the cultivation of wheat in Russia, the part assigned to winter wheat is only 3,134,000 hectares, whilst the cultivation of summer wheat occupies not less than 8,441,000 hectares.

We know that, in respect to its botanical properties, wheat (*triticum*) is a species which is generally divided into four principal classes, established by Nilmorin, and at present adopted by the majority of savants who have occupied themselves with this question, amongst others by M. M. G. Henje and Haberlandt. These four classes are:

1. Vulgar, or ordinary wheat or corn (*Triticum sativum* Lomam s. vulgare Willd.)
2. Hard wheat or corn (*Triticum durum*, Desf.).
3. English wheat or corn (*Triticum turgidum* L.); and
4. Polish wheat or corn (*Triticum Polonicum*).

To the wheat species belong also the different varieties of spelt, which are divided into two or three classes, which we mention here only for the purpose of placing them on record. These classes are: (*Triticum spelta*), starchy grain (*Triticum dicoccum*, shank), and (*Triticum monococcum* L.). Compared with wheat, properly so called, these varieties possess only a secondary importance.

Along with the botanical classification, there is also another, based on the character and chemical composition of wheat. This classification, established by M. Million, is nearly as important as the first from a practical point of view, especially in relation to commerce, and the utilization of wheat for grinding. According to this classification, the different varieties of wheat may be referred to three great classes, viz.:

1. The kinds consisting of hard grain.
2. The species consisting of half-hard grain; and
3. The species consisting of soft grain.

The characteristic properties of these various kinds are sufficiently well known to dispense us from any necessity of treating of them here. We shall merely remark that the chemical classification does not correspond with the botanical classification, and that varieties of wheat botanically different, often belong to one and the same category of hard or soft wheat, and *vice versa*. On the other hand, the various kinds of wheat mentioned above are subject to infinite variations, lose or gain, according to the method of cultivation, the influence of soil and climate, etc., and the properties which characterize them both in a botanical and chemical point of view. The fluctuation of these properties and their frequent transformations, prevent any more ample classification of the various kinds of wheat cultivated in a country, especially when the country is so large as Russia, and presents so many conditions so different in every respect.

We shall restrict ourselves, then, rather to the practical than the theoretical division of the various kinds of wheat cultivated in Russia, of winter and summer wheat. Although this division rests on no scientific basis, and it is incontrovertible that certain varieties of wheat may be cultivated, and are in reality cultivated, both as winter and summer wheat, nevertheless this division must be adopted in Russia more than elsewhere, for the very method of cultivation of both the winter and summer species varies very much in that country.

* A kilometre is about 1,070 yards.
† A hectolitre is 2½ imperial bushels.
‡ A hectare is about 2½ acres (2.471).

(To be continued).

The following parties are remodeling their mills to the new process, adding purifiers, middlings-burrs, bolting chests, elevators and other necessary appurtenances: Wm. Harding, Crooked Creek, Ind.; G. W. and J. E. Millspaugh, Fairfield, Iowa; G. W. Graham, Carbondale, Ill.; W. H. Huntsman, La Porte, Ind.; O. D. Merritt, Morristown, Tenn.; Harris & Campbell, Potomac, Ill.; D. A. Richardson, Indianapolis, Ind.; C. P. Chapman, Pittsfield, Ill.; Cooper & Funk, Shelbyville, Ill.; Elijah Lewis, Chariton, Iowa; B. M. Simmons, Adairville, Ky.; and James Mack, Smithfield, Utah.

Steam Power For Flouring Mills.

President Elles, of the association having introduced the speaker, Mr. Barr said:

I have been asked by several members of this association to give you an informal talk this evening on a subject which, next after milling itself, is of the greatest importance to the miller.

The milling interest in this State is not only large and important, but growing. The mill of to-day, as well as that of the future, must, from the nature of things, be a steam mill. Thus I can easily understand why you in convention in which your time is necessarily short, deem the subject of sufficient importance to devote an entire evening to the discussion of steam power.

The steam engine is made to include in its widest application, everything relating to the motive power of the mill. It will answer our present purpose if we divide the subject into three parts:

1. The engine proper.
2. The boilers.
3. The furnace.

Most of you are familiar with the various competing engines now in the market, so I will leave that part of my talk until later in the evening and will take up the subjects in the reverse order in which I have named them, beginning with the furnace.

In designing a furnace it is important to know what kind of fuel is to be used. The fuels at our immediate command are wood, bituminous and anthracite coals. I think it improbable that any mill in Indiana is regularly using anthracite coal as a fuel. A small percentage of mills use wood, but the larger number use bituminous coal. Fortunately we have not only an abundant supply but an excellent quality of bituminous coal in this State. The problem of the furnace is somewhat complex as its functions are partly mechanical and partly chemical. A fair consideration of either or these would occupy too much time this evening, yet the importance of the subject will not allow it to be passed by without a word. The design of the steam engine as a whole is simply a train of mechanism by which fuel is converted into power in motion. For the present, then, we shall leave the steam engine and devote a few minutes to coal.

The best varieties of Indiana coal contain about 55 per cent of carbon, and 35 per cent of hydrogen carbon gas. The value of any fuel depends upon its capacity for giving off heat. In this respect the Indiana coals are entitled to take high rank when properly burned. Engineers usually estimate the value of coal by comparative evaporation. I do not think this is as good a way as that employed by chemists who fix its value accordingly as it contains a greater or less number of heat units. By a heat unit is meant that quantity of heat which will raise the temperature of water one degree Fahrenheit from 30 to 40. This particular temperature is named because it is that at which water is at its greatest density. One pound of pure carbon such as charcoal or good coke yields about 14,500 such units when properly burned. One pound of hydrogen burned in oxygen gas, gives off during its complete combustion more than 60,000 heat units, or more than four times that of carbon. The thermal power of Indiana coal will not vary much from a general average of about 14,000 heat units; as this is not far below the theoretical value of carbon, and as our coal contains only about 50 per cent of carbon, this number of heat units is to be accounted for by the presence of the hydrogen in the coal.

In burning this coal, the products of combustion of the carbon will be carbonic acid gas if perfectly burned; and carbonic oxide gas if perfectly burned; of the hydrogen, the product of combustion will be water.

A great deal has been said and written on the subject of smoke and it has been made to bear the burden of incompetency these long years. I admit that smoke is a great nuisance and should not be permitted to escape, especially in the larger cities and towns. Its prevention is not difficult, and in England where its escape had become an unbearable nuisance, legislation was invoked when a reconstruction of furnaces began, which soon solved the practicability of the problem. There is of course some loss attending a smoky furnace, but the loss by these sooty particles is not so great as is generally supposed. The great source of loss is by imperfect combustion, that is, by burning coal to carbonic oxide gas, instead of carbonic acid gas. Let us see what this amounts to. One pound of carbon is equivalent, as I stated a few minutes ago, to about 14,500 heat units when burned to carbonic acid gas; if burned to carbonic oxide gas its heating power is reduced to about

4,500 heat units—so you see that it makes a difference of about 10,000 heat units for every pound of carbon burned whether it is burned to carbonic acid gas, or carbonic oxide gas. This enormous waste may be going on constantly without the knowledge of either the engineer or mill-owner for the reason that carbonic oxide gas is invisible. It would be a fortunate thing indeed if it were otherwise. The formation of this gas may be explained in some such way as this: Suppose the furnace to be in active operation, the grates covered with a mass of coal in process of combustion; the air entering the ash pit comes in contact with the body of highly heated carbon, the oxygen of the air unites with the carbon in the proportion of two atoms of oxygen to one atom of carbon to form carbonic acid gas. This is, so far, perfect combustion, but in passing through the body of the fuel it takes up another atom of carbon which changes the chemical nature of the carbonic acid gas and converts it into carbonic oxide gas, which consists of one atom each of carbon and oxygen. This product unlike the first is imperfect combustion. Now if we have a properly constructed furnace we may again convert this carbonic oxide gas into carbonic acid gas. What is needed is a supply of air above the fire. This air must be admitted in limited quantity and at a high temperature. A very good way to get this is to build hollow walls around the furnace, and force the air past the highly heated fire-brick lining. This ought to raise the temperature up to several hundred degrees.

Another source of loss is occasioned by the admission of too much air in the furnace. The actual quantity required is about 150 cubic feet per pound of coal; it has been experimentally determined that about double this quantity is usually supplied. In addition to this about one-fourth of the total heat of the furnace passes up the chimney, serving no other purpose than making a drift through the fire. Let me put this in another way: Those of you who are burning four tons of coal in twenty-four hours are losing the useful effect of one ton of coal, receiving nothing in return but draft or circulations through the furnace; I have made no calculations in regard to it, but I venture the assertion that it would furnish power enough to run a dozen blowers large enough to supply all the air needed to consume properly the same amount of fuel.

In regard to steam boilers, the practice in this country is almost entirely confined to horizontal cylinder, flue, or tubular boilers, externally fired, and set in brick work. The horizontal tubular boiler has a good record, and is the one usually selected for flouring mills. The question as to whether a boiler should be fired externally or internally can hardly be said to be definitely settled. There are weighty arguments on both sides, and so far as I have been able to gather any testimony in regard to either, I fail to see any good reason why we should give up our standard horizontal tubular boiler. One very important thing in regard to the selection of a boiler is to see that proper provision has been made for a good circulation of water around the shell and tubes, and, that suitable openings are provided for internal inspection and cleaning. Most of the well water in this State is very hard. The scale formed by its evaporation is composed principally of carbonate of lime and magnesia. Some provision must be made to get this out of the boiler. My own practice has been to put a man-head in the front of the boiler under the tubes, and one at the back end of the boiler and above the tubes. In all ordinary cases this allows ample facility for cleaning and repairs.

Defective circulation lowers the steam producing power of the boiler by the over heating of the plates so that the water repelled from the iron, a thin film of vapor interposing between the water and the iron. This condition of things is often referred to by writers as the spheroidal state of water. In explanation of this, you have all at some time or another observed the action of drops of water spilled on the top of a highly heated stove; the water does not break out into steam, but assumes a globular or spheroidal shape giving off no steam. It is in contact with the iron but only at a single point, it runs along the top of the stove and finally over, the edge to the floor. When the water is in this state, and the fire at a very high temperature, there is danger of weakening the boiler by overheating the plates.

But, aside from all this, if the water at the bottom of the boiler cannot easily reach the surface after it has become heated, it is obvious that the construction of the boiler is defeating the very object for which it was designed and built.

Every set of boilers should have a good steam pump. It may take a little more steam to operate the pump in this way than if a belt pump were used, but its advantages and conveniences will more than offset the other. Every steam boiler should have a good safety valve. The practice of connecting several boilers together and having but one safety valve for the lot, is altogether wrong. Every boiler should have a good steam gauge, the very best that can be had; the difference in price between a good gauge and a poor one is so small that it ought never to be taken into account. It not unfrequently happens that the safety of the whole establishment depends upon the reliability of the steam gauge, and especially in this true where boilers are in use, which from long services and other causes are not safe above certain pressures.

The heating of the feed water is an important matter. This is usually accomplished by the exhaust steam being conducted into a closed vessel in which there are coils of pipe through which the feed water passes. Advantage may also be taken of the heat in the exhaust steam to precipitate impurities in the water. The action of the "Stillwell" heater may be taken as an example.

In regard to the engine proper the choice lies between the ordinary slide valve engine, the automatic slide cut off, and engines with a detachable valve gear automatically regulated by the governor. The first is the commonest form of a steam engine. It furnishes a compact, simple, and durable engine if properly designed and built. The point of cutting off is fixed during its construction and is not variable; in ordinary practice it ranges anywhere from five-eighths to seven-eighths of the stroke from the beginning. The action of the governor on this class of engine consists in reducing the pressure of steam in its flow from the boiler to the cylinder so that the average pressure of steam on the piston shall permit a certain number of revolutions under a certain load. This is by no means the most economical form of engine. Yet, for small mills, it is often to be recommended rather than a complicated automatic engine, notwithstanding the increased fuel consumption by taking into account a lower first cost, simplicity and ease of management by unskilled persons.

There are several automatic slide cut-off engines in this market; perhaps the one best known to most of you is the "Buckeye" engine. A very superior valve gear, though but little used in the West, is the "Rider." The "Allen" engine, as designed by Mr. Charles T. Porter, is in many respects a superior engine.

Taken all together this particular type of engine is to be recommended mainly because of its positive valve motion, and the high rate of revolution possible—two very desirable features in a mill engine. The present tendency with millwrights is to connect the mill shaft directly to the engine shaft and require the engine to run at such rate of revolution as the machinery of the mill requires. The tendency is, therefore, to larger cylinders, shorter stroke and higher speed. The demands made upon the builders are for better designs, the best of materials, good workmanship and guaranteed performance.

Where mills are large and must of necessity be geared, then slow running engines are to be used. Among the competing engines of this class now in the market, and fitted with a variable automatic cut-off gear, controlled by the governor, I have in mind the "Corliss," "Brown," "Wright," and one or two others of which I do not now recollect the builder's names. The "Corliss" is perhaps the best engine known, and most talked of, of any engine ever built. Its record is one of which the designer, and the country as well, may be proud. The best results with this class of engines are to be obtained by using steam at a high pressure and cutting off, say from one-fifth to one-fourth from the beginning of the stroke and expanding down as near the atmospheric line as possible.

In regard to economical use of steam, the engines I have just named are about equal. These engines have what is known as a drop cut-off, that is, at the beginning of the stroke, the steam valve is moved by means of what is technically known as a "clutch" or "toe," and continues its movement until it reaches a "stop," the position of which is regulated by the governor; this stop unhooks or detaches the valve and allows its being seated independently of the rest of the moving mechanism. This is usually accomplished by means of a weight or spring. The exhaust valves are not affected by the closing of the steam valves. For engines making not more than, say sixty-five revolutions per minute, this type of valve gear has few objections and has become very

popular, and on the whole has given excellent results.

This has been a rambling sort of a talk, and in conclusion I beg to say that it seems to me that the ideal engine of the ideal mill would be something like this: A high speed automatic cut-off engine with a positive cut-off motion. Whether this shall be controlled by a governor or by some other mechanism operated by the pressure of steam, I cannot say, though I think the governor will probably be retained. The boilers are to be capable of carrying a working pressure of steam from 100 to 150 pounds per square inch with perfect safety. The furnace to be built on an entirely different principle from that in which ordinary boilers are now set. A force of draft to be used instead of natural draft. The products of combustion instead of being allowed to escape up the chimney, will probably be forced into a separate chamber alongside the boiler setting, and made to do duty in heating the air before entering the ash pit. The feed water may also be taken into this chamber and allowed to absorb as much heat from it as possible. A self-feeding mechanism of some sort for mechanical firing is also needed; this should feed the fire from below, instead of scattering the fuel over the top of the fire.

I had intended saying something about sectional boilers, but the lateness of the hour and not having anything to show the peculiarities of construction, will prevent my introducing it to-night. These are proprietary designs, and are furnished only as the owners of the patents in their judgment think best adopted to particular cases.

I have omitted many things in this talk and would be glad to answer any questions that may suggest themselves to you.—By W. M. Barr, of Indiana, at the Indiana Convention.

BREAD is now selling in London at twelve cents for the four-pound loaf, that is at three cents a lb. The present price is unusually low, however, and it has not been so low more than three or four times in the last forty years. The average price for the last ten years has been just about 4 cents a lb.

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Judge Dillon of the United States Courts on the 28th of March decided that their paper was worthless on its face, independently of the other paper.

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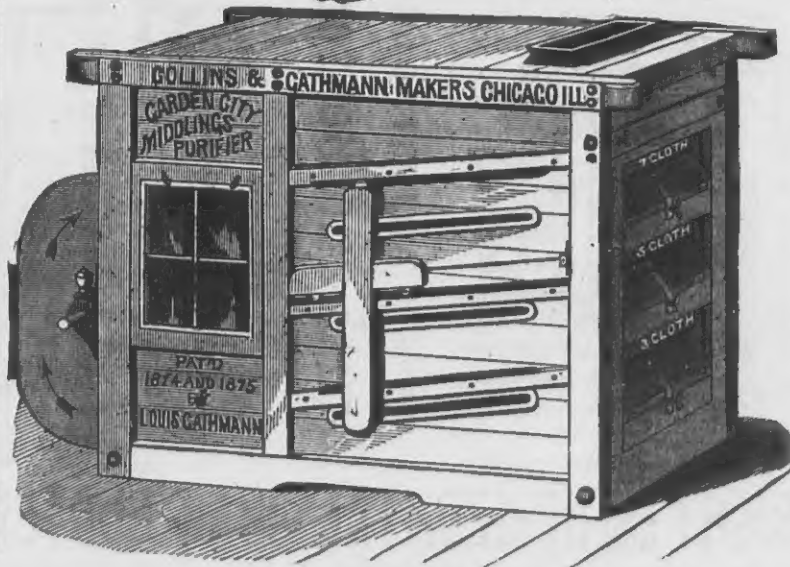
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WANTED.—A young miller who is well posted to take charge of my mill. He must thoroughly understand dressing and keeping the stones in order. In answering this state how long and where you have worked, and what wages you expect. Address VARIETY WORKS, P. O. Box 23, Union Springs, Ala. jylt

WANTED.—A first-class foreman to take charge of a stone shop; must be perfectly competent to superintend building and finishing burr stone. Best references required, and none but experienced men having acted as foreman need apply. A good chance for the right man. Address F. J. S., care United States Miller, aptf

WANTED.—A situation as Oatmeal Miller by a thoroughly practical, competent man, sober and steady; understands all the different grades for home and foreign markets; the drying and handling of oats in all its details; has had a long experience and can come well recommended. Address "Oatmeal Miller," care of United States Miller, Milwaukee, Wis. ap3t

SITUATION WANTED.—A practical miller of ten years' experience with winter wheat (best flour on new process) desires a place in a thorough new process mill in any capacity in which he can perfect himself in the art of high grinding (spring or winter wheat). Am 33 years old, industrious and temperate in all things; wages no object; unexceptional references given. Address, June 11. Care of Reamer & Co., Chetopa, Kansas. A. D. REAMER.

SITUATION WANTED.—By a young man, who has had four years' experience in the milling business. Being part owner of the Neely Mills, Columbia, Tenn., he has had the management of those mills, keeping the books, superintending the grinding, and doing some traveling for the mills. The firm of which he is a member have just leased out the mill and property for a term of years, and he wishes to engage with a medium-sized mill in any capacity. Can take charge of, and successfully run, a 2 or 3 run mill, attending to the stone dressing, grinding, and anything else necessary to do. Has had a good business education, and can furnish the best of references as to honesty, energy, and social standing. Address E. O. NEELY, Box 137, Columbia, Tenn. mytf

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Advertisements under this head \$2 per insertion, cash with order.

FOR SALE.—One-half of 3-run, water power flouring mill, all in good order, and fully equipped with purifier, brush, smutter, separator, Parker scales and good office. Will sell easy on terms, and take part in good farm. I. W. DALLY, Woodbine, Iowa. jy*

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FOR SALE.—At La Grange, Mo., A four-run, brick, steam mill, situated on the Mississippi River, and on the St. Louis and Northwestern Railroad. This mill is 60 feet square and four stories high; it also has an L 60 feet long by 30 feet wide, three stories high, furnishing storage room for 10,000 bushels wheat and 5,000 barrels flour; well and substantially built; boilers, engines and machinery almost new; contains 4 runs of old stock French burrs and one pair for regrinding, with ample bolting capacity; 1 separator, 2 smutters, 1 brush scouring machine, 1 purifier, 3 pairs flour and wheat scales, and 1 six-ton wagon scales. This mill is situated in a splendid wheat region, and will be sold at a bargain. Address the LA GRANGE SAVINGS BANK. jy*

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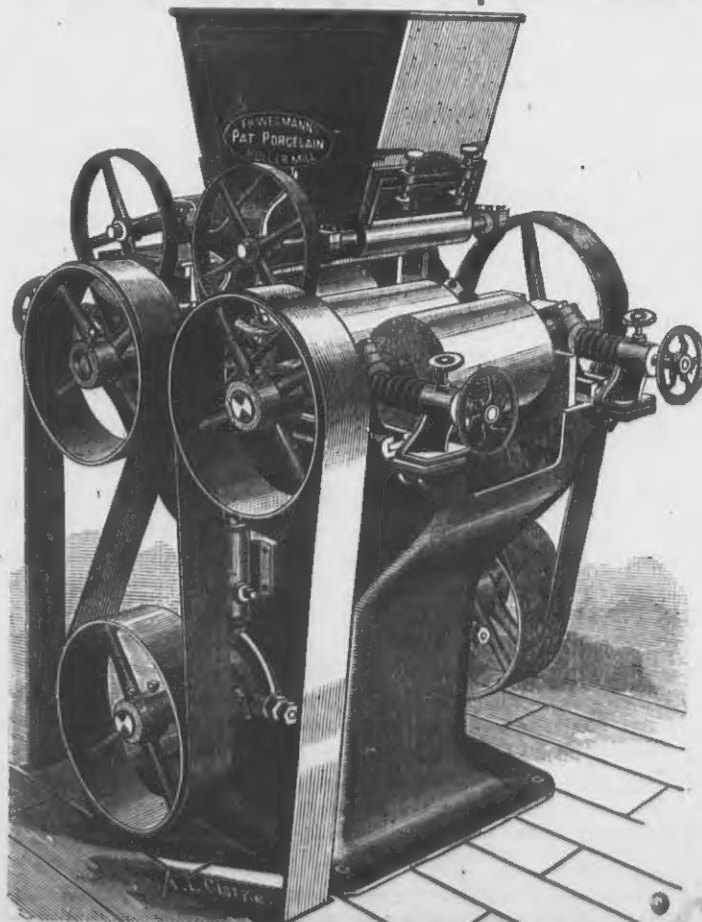
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Judge Dillon of the United States Courts on the 28th of March decided that their paper was worthless on its face, independently of the other paper.

I will hold all millers responsible to me who purchase from E. P. Allis & Co., or any other person but myself or authorized agents. I will defend all who purchase from myself or authorized agents.

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We will simply say in answer thereto:

First—We have never reassigned Process Patent No. 162,157 to any person, but own said patent now.

Second—If Mr. Downton has a reassignment of his Patent Process, No. 162,157, from us to him, as he now claims, then he thereby admits that he did assign to us said Process Patent, No. 162,157.

Third—If he has such a reassignment why does he not publish it to the world, and by so doing make his "emphatic notice to millers" MORE EMPHATIC than his unsupported word that he has such a paper.

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NORTHWESTERN DISTRICT OF ILLINOIS.

Saturday, June 21st, A. D. 1879.

Present HON. THOMAS DRUMMOND, Judge.

THROOP GRAIN CLEANER CO.,

vs. EUREKA MANUFACTURING CO.,
and JOHN M. GALT. In Equity.

This cause having been heretofore heard on bill, answer and proofs and referred to the Master, under decree entered, to take and report an account of damages, and the complainants now waiving such accounting under settlement made;

It is ordered, adjudged and decreed, that the decree entered otherwise remains in full force and effect; and the injunction heretofore granted shall stand as to all machines, containing flanges, rings, or any equivalent provision, for expanding or contracting the scouring jacket or case.

It is ordered, adjudged and decreed that the defendants pay to the complainants the sum of one cent as its damages, and that the defendants pay the costs.

NORTHERN DISTRICT OF ILLINOIS.—ss.

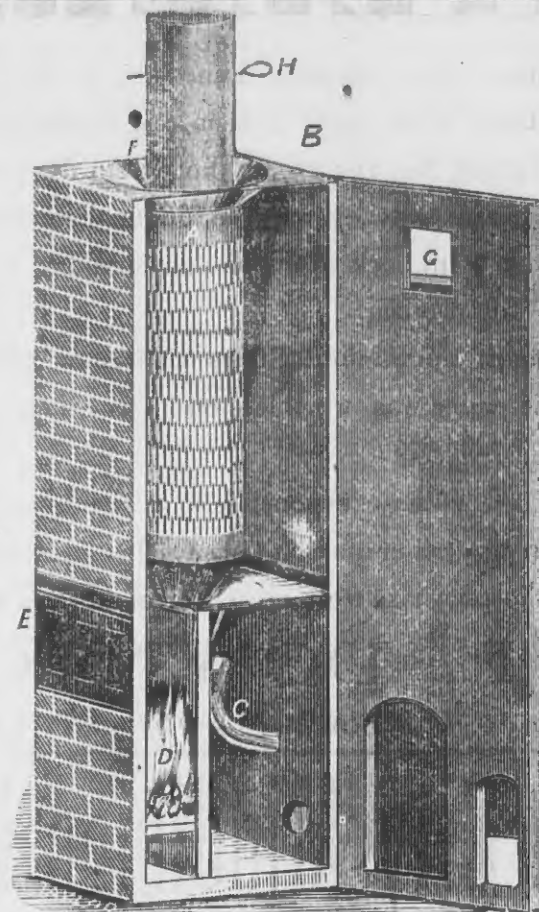
I, William H. Bradley, Clerk of the Circuit Court of the United States, for said Northern District of Illinois, do hereby certify the above and foregoing to be a true and correct copy of the order entered of Record in said Court, on the 21st day of June, A. D. 1879, in the cause wherein Throop Grain Cleaner Co. is the complainants, and Eureka Manufacturing Co. is the defendants, as the same appears from the original Record of said Court, now remaining in my custody and control.

In testimony whereof I have hereunto set my hand and affixed the seal of said Court, at my office in Chicago, in said district this 21st day of June, A. D. 1879.

WM. H. BRADLEY, Clerk.

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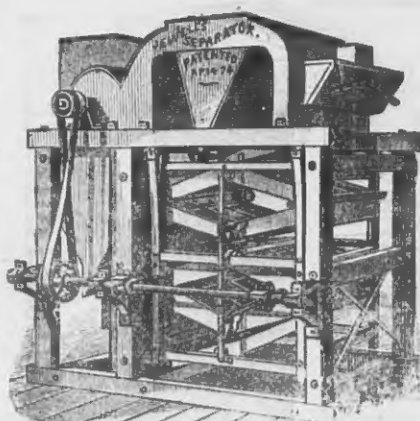
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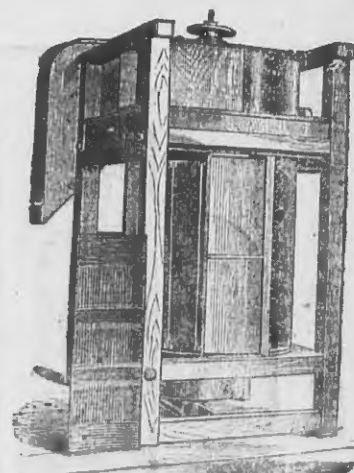
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